



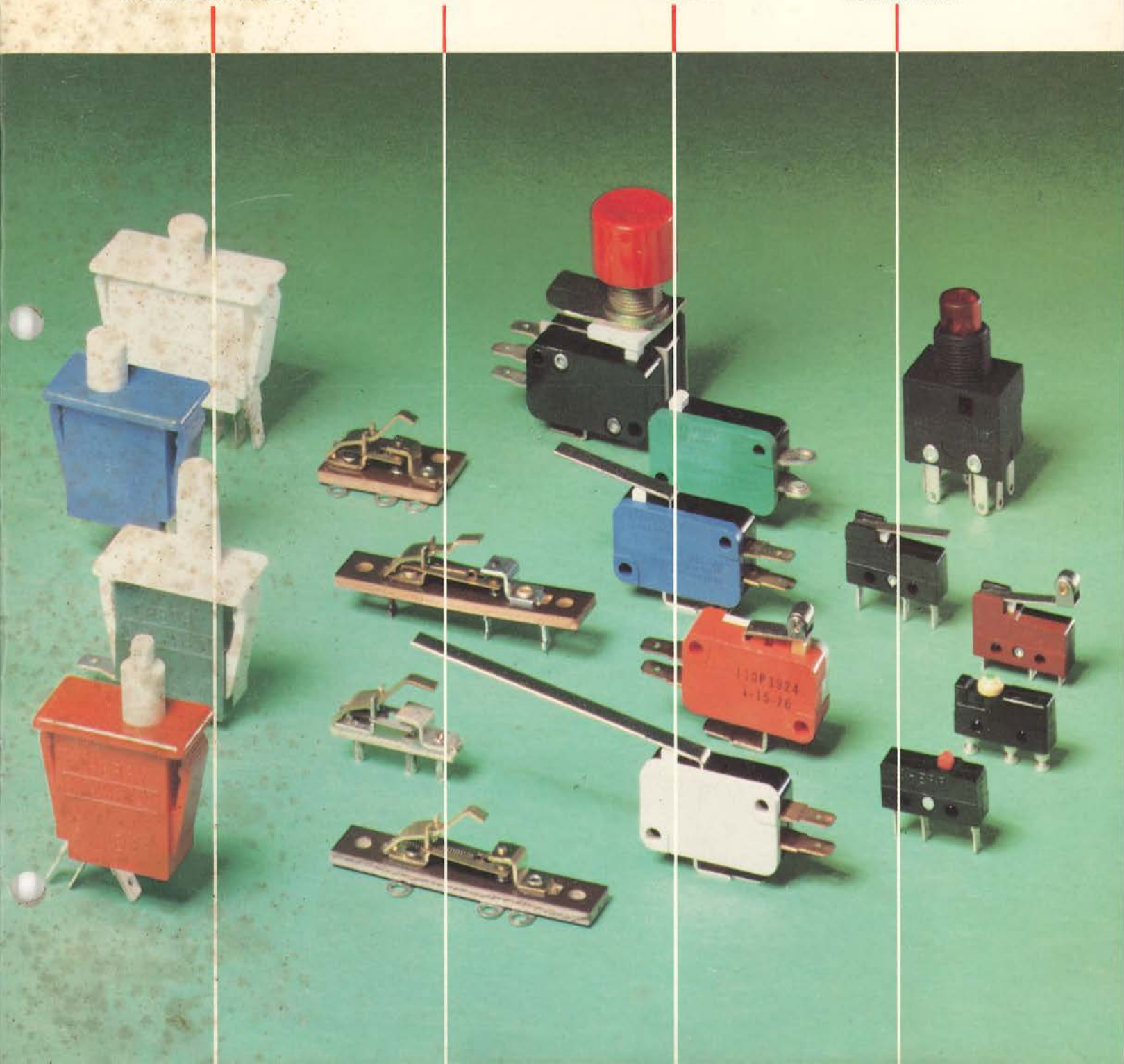
Snap-action Switches

PANEL MOUNT PUSHBUTTON

OPEN

MINIATURE

SUBMINIATURE





Cherry products are universally available from sales offices, distributors and licensees in major world markets. To supply this worldwide distribution system, we have six manufacturing locations, each with its own engineering and sales staff.

Cherry Electrical Products Corp. (Corporate Headquarters) . . . **USA**
3600 Sunset Avenue, Waukegan, Illinois 60085

Cherry Semiconductor Corp. (Integrated Circuits) **USA**
2000 South County Trail, East Greenwich, Rhode Island 02818

Cherry Mikroschalter GmbH **Germany**
8572 Auerbach/OPF, Bavaria, Industriestrasse 19

Cherry Electrical Products Ltd **United Kingdom**
Coldharbour Lane, Harpenden, Hertfordshire AL5 4UN

Hirose Cherry Precision Co., Ltd. **Japan**
2139 Shukugawara, Kawasaki

Cherco Brasil Industria E Comercio Ltda. **Brazil**
Rua Laurea, 63, Santo Amaro, Sao Paulo CEP 04688

All Cherry products are designed and manufactured under the technical guidance of an experienced staff of mechanical, electrical, tool, industrial and manufacturing engineers. Personnel trained in many skills operate advanced assembly and fabrication machinery to provide our customers with the highest quality at prices that are truly competitive.

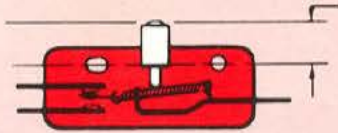
Cherry's product line includes:

- Custom Digital and Linear Integrated Circuits
- Lighted Pushbutton Switches
- Plasmalux Gas Discharge Display Panels
- Alphanumeric Display Systems
- Precision Snap Action Switches
- Line Interrupt Switches
- Low Energy Gold Crosspoint Contact Switches
- Keyboards and Keyboard Switches
- Matrix Selector Switches
- Thumbwheel, Leverwheel and Pushwheel Switches

For additional information on these other Cherry product lines, see page 30.

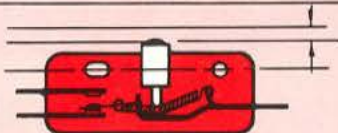
snap-action switch terms

Throughout this catalog various terms are used to describe each switch. Illustrated by a closed switch, the technical terms apply to all snap-action switches.



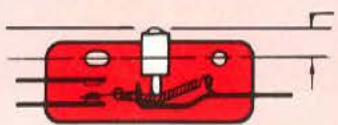
REST POSITION . . .

is the position the switch button (or actuator) assumes when no force is exerted against it. Rest position is dimensioned from the top of the switch button (or actuator) to the mounting hole centerline, top of switch panel or other specified reference.



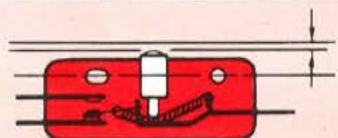
PRETRAVEL . . .

is the distance of button (or actuator) movement from rest position to the point of operation. Pretravel is frequently specified as maximum.



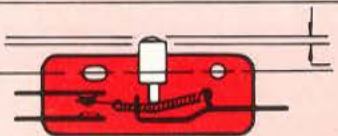
OPERATING POINT . . .

is the position of the switch button (or actuator) at which initial switch contact transfer takes place. Operating point is dimensioned from the top of the switch button (or actuator) to mounting hole centerline, top of switch panel or other specified reference point.



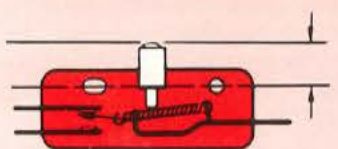
OVERTRAVEL . . .

is the continued switch button (or actuator) movement possible after initial contact transfer, without bottoming or damage to the switch mechanism. Overtravel is frequently specified as a minimum.



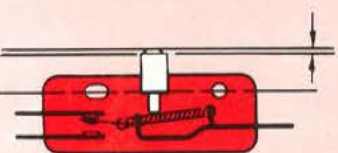
MOVEMENT DIFFERENTIAL . . .

is the button (or actuator) movement required between operating point to reset point. This is frequently dimensioned as a maximum.



RESET POINT . . .

is the point of actuation at which the second, or return contact transfer takes place. At this point the contacts snap back to their original position. Reset point is dimensioned from top of switch button (or actuator) to mounting hole centerline, top of switch panel or other specified reference point.



RESET TRAVEL . . .

is the continued switch button (or actuator) movement back from reset point.

OPERATING FORCE . . .

is the force required to depress the switch button (or actuator) to trip (operating point). Operating force is always specified as maximum.

NOTES UL & CSA LISTINGS

Most of the switches shown in this catalog have UL and CSA listing. These are indicated with a notation "Und. Lab. Inc. listed and CSA approved" in each section just above or below the rating.

Underwriters Laboratory Incorporated listing:
Guide 380-W-19.19.19P File E23301

Canadian Standards Association listing:
Guide 380-W-19.19.19P File 16503

Class 6241

TOLERANCES

All dimensions shown carry the following tolerances unless otherwise specified:

Fractions: $\pm 1/64"$ Decimals: $\pm .005$
Angles: $\pm 5^\circ$

CIRCUITRY



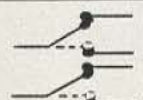
S.P.S.T.-N.O. Single pole, single throw, normally open.



S.P.S.T.-N.C. Single pole, single throw, normally closed.



S.P.D.T. Single pole, double throw.



D.P.D.T. Double pole, double throw.

snap-action switch selector

SWITCH RATING*				Switch Operating Force†	Switch Movement Differ'tial†	Switch Circuitry Available	Switch Type	Switch Series Number	Located on Page Number
Electrical		Horsepower							
125 V AC	250 V AC	125 VAC	250VAC						
0.1 Amp.	—	—	—	Gold Crosspoint Contacts For Low Energy Circuits					26-27
3 Amp	3 Amp	—	—	75 Grams	.010	S.P.D.T. and S.P.S.T.	Miniature	E22	10-11
3 Amp	3 Amp	—	—	15 Grams	.010	S.P.D.T. and S.P.S.T.	Light Force Miniature	E22 "X"	12-13
5 Amp	5 Amp	—	—	90 Grams	.004	S.P.D.T. and S.P.S.T.	Subminiature	E61	8-9
5 Amp	5 Amp	—	—	90 Grams	.004	S.P.D.T and S.P.S.T	Solid Base Subminiature	E91	6-7
5 Amp	5 Amp	—	—	4.0 inch gram torque	3° Min.	S.P.D.T. and S.P.S.T.	Low torque	E51	18-19
5 Amp	—	—	—	3 Ozs.	.070	S.P.D.T. and S.P.S.T.	Light Force Open	S23	24
5 Amp	5 Amp	1/4	1/4	45 Grams	.010	S.P.D.T. and S.P.S.T.	Light Force Miniature	E23 "X"	12-13
5 Amp	5 Amp	1/4	1/4	6 Ozs.	.016	S.P.D.T. and S.P.S.T.	Miniature	E23	10-11
10 Amp	5 Amp	1/6	1/6	7½ Ozs.	.085	S.P.D.T. and S.P.S.T.	Miniature Open	S30	25
10 Amp	5 Amp	1/4	1/4	9½ Ozs.	.070	S.P.D.T. and S.P.S.T.	Basic Open	S25	24
10 Amp	10 Amp	1/3	1/3	15 Ozs.	.045	S.P.D.T. and S.P.S.T.	Panel Mount Pushbutton	E69	14-15
10 Amp	10 Amp	1/3	1/3	24 Ozs.	.075	D.P.D.T. and D.P.S.T.	Panel Mount Pushbutton	E79	16-17
10 Amp	10 Amp	1/2	1/2	75 Grams	.010	S.P.D.T. and S.P.S.T.	Light Force Miniature	E33 "X"	12-13
10 Amp	10 Amp	1/2	1/2	10 Ozs.	.016	S.P.D.T. and S.P.S.T.	Miniature	E33	10-11
10.1 Amp	10.1 Amp	1/4	—	212 Grams	.004	S.P.D.T. and S.P.S.T.	Subminiature	E62	8-9
10.1 Amp	10.1 Amp	1/4	1/4	300 Grams	.004	S.P.D.T.	Water Resistant	E72	25
11 Amp	11 Amp	1/4	—	212 Grams	.004	S.P.D.T. and S.P.S.T.	Solid Base Subminiature	E92	6-7
15 Amp	15 Amp	1/2	1/2	100 Grams	.010	S.P.D.T. and S.P.S.T.	Light Force Miniature	E34 "X"	12-13
15 Amp	15 Amp	1/2	1/2	14 Ozs.	.016	S.P.D.T. and S.P.S.T.	Miniature	E34	10-11
15 Amp	15 Amp	3/4	1-1/2	15 Ozs.	.015	S.P.D.T. and S.P.S.T.	Single Pole General Purpose	E13	20-21
15 Amp	15 Amp	3/4	1-1/2	30 Ozs.	.015	D.P.D.T. and D.P.S.T.	Double Pole General Purpose	E19	22-23
20 Amp	20 Amp	1	2	45 Ozs.	.015	D.P.D.T. and D.P.S.T.	Double Pole General Purpose	E20	22-23
25 Amp	25 Amp	1	2	30 Ozs.	.015	S.P.D.T. and S.P.S.T.	Single Pole General Purpose	E14	20-21

* All snap-action switches are Underwriters Laboratory Inc. Inspected and Canadian Standard Assn. Approved.

† Movement Differential and Operating Forces shown are maximums (except as indicated for E51) for basic types and are measured at switch button.

To convert ounces into grams multiply by 28.349527

To convert grams into ounces multiply by 0.03527.

To convert inches into millimeters multiply by 25.40

To convert millimeters into inches multiply by 0.03937

SNAP-ACTION SWITCHES

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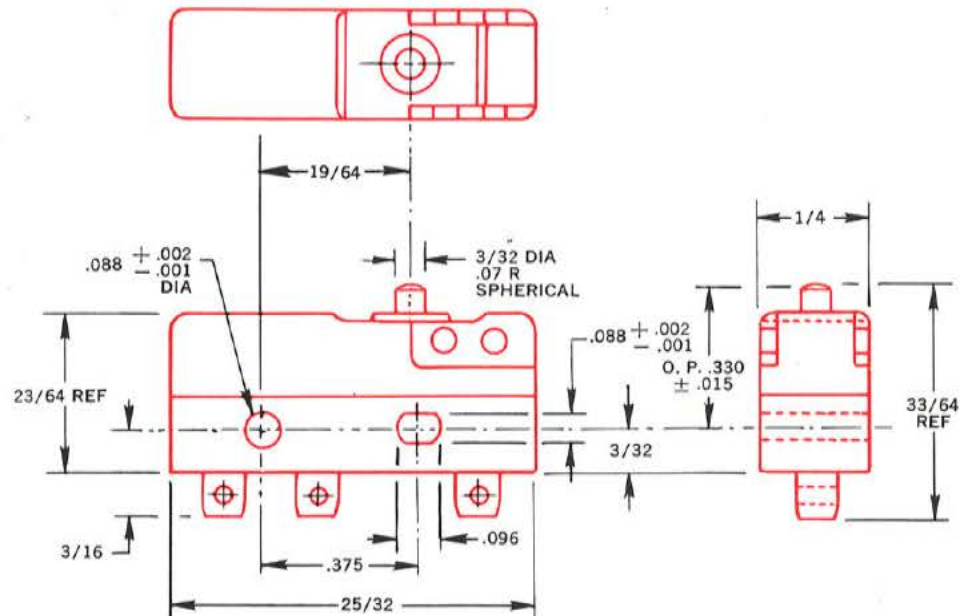
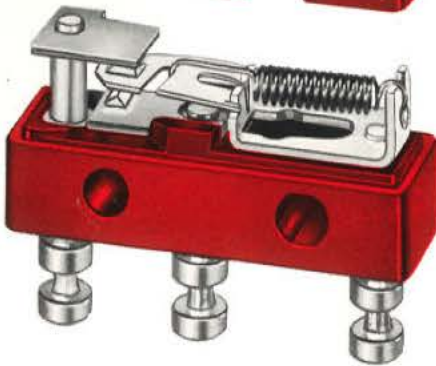
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subminiature / solid base

SERIES E91—LIGHT FORCE

SERIES E92—STANDARD FORCE

SERIES E93—LIGHT FORCE, GOLD CROSSPOINT



RATING: E91—5 Amps., 125/250 VAC
RATING: E92—11 Amps., 125/250 VAC
 1/4 H.P., 125/250 VAC
RATING: E93—0.1 Amps., 125/250 VAC

Und. Lab. Inc. listed, and CSA approved.



	—AA standard ratio		—LB standard ratio		—MB high ratio		—LD standard ratio		—MD high ratio	
	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed
OPERATING FORCE E91 SERIES (Maximum Grams)**	90	125	28	39	16	23	21	28	12	17
OPERATING FORCE E92 SERIES (Maximum Grams)	212	—	65	—	38	—	48	—	28	—
OPERATING FORCE E93 SERIES (Maximum Grams)	90	125	28	39	16	23	21	28	12	17
PRETRAVEL (Maximum inches)	.030	.030	.120	.120	.205	.205	.162	.162	.276	.276
OPERATING POINT* (in inches)	.330 $\pm$.015	.330 $\pm$.015	.345 $\pm$.060	.345 $\pm$.060	.345 $\pm$.100	.345 $\pm$.100	.345 $\pm$.080	.345 $\pm$.080	.345 $\pm$.130	.345 $\pm$.130
OVERTRAVEL (Minimum inches)	.035	.010	.050	.035	.060	.060	.070	.045	.080	.080
MOVEMENT DIFFERENTIAL (Maximum inches)	.004	.004	.020	.020	.035	.035	.035	.035	.055	.055
ACTUATOR LENGTH (Tolerance of $\pm$ 1/32")	—	—	.285	.285	.410	.410	.575	.575	.700	.700

REMARKS: *Measured above reference line

NOTE: Nominal button rest height is .353" $\pm$.015"

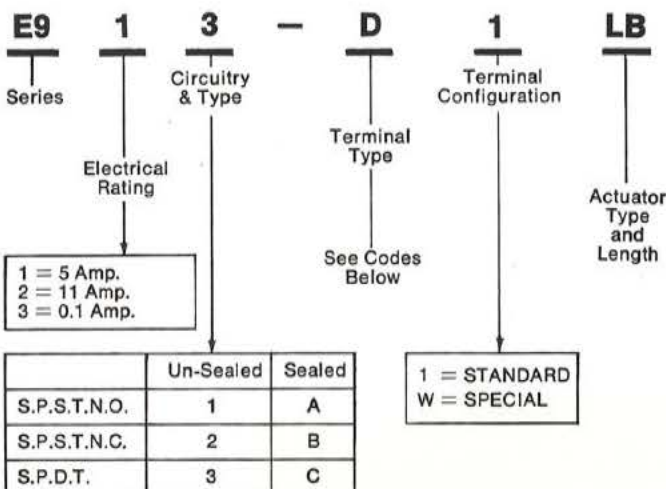
**NOTE: Gold Crosspoint configuration also available on most other snap-action switches in this catalog. See pages 26-27.

TOLERANCES: Fractions: $\pm$ 1/64"
 Decimals: $\pm$.010
 Angles: $\pm$ 5°

- Long Life Coil Spring Mechanism
- Large Overtravel
- Rock Wipe Contact Action
- External Hinged Actuator
- Insert Molded Terminals
- Small Compact Size
- Custom Designs
- Sealed or Un-Sealed

ORDERING INFORMATION

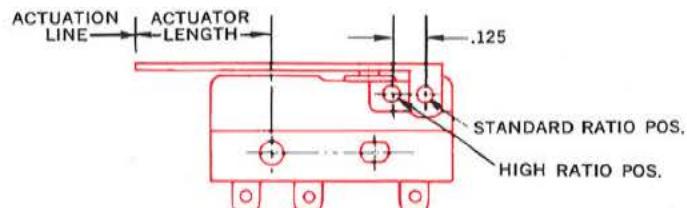
The example calls out a Series E9 solid base subminiature switch with 5 Amps., 125/250VAC electrical rating; S.P.D.T. circuitry, unsealed type; double turret terminal type; standard terminal configuration; with a flat leaf actuator in the standard ratio position giving an actuator length of .285".



TERMINALS — Choice of Solder/Cross Drilled (Code C), Double Turret (Code D), *.058" QC Pin (Code P), or Single Turret (Code S). Please specify code designation when ordering. (See below.)

*May be used with female QC on E91 and E93 only. On E92 to be used as solder terminal only.

ACTUATORS — Many special forms and lengths of actuators are available with tooling charge applying. Standard type external hinged lever and roller actuators are available in choice of 2 pivot positions (standard ratio and high ratio). Actuator lengths are dimensioned from centerline of switch mounting hole as shown.



CIRCUITRY & TYPE — Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed.

SEALED



UN-SEALED

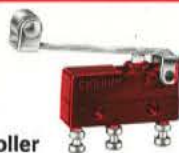


Sealed or Un-Sealed — Sealed version has actuator button construction with moisture protection provided by elastomer boot. Sealed version of E92 switch not available.

MATERIALS	
PARTS	SERIES E91, SERIES E92 & SERIES E93
Case	General purpose phenolic
Actuating button	Acetal or similar
Common terminal	Plated Copper Alloy
NO and NC terminals	Plated Copper Alloy
Moving blade	Copper Alloy
Contacts	Silver (Series E91 and E92) or WE Alloy No. 1 (Series E93)
Spring	Stainless Steel
Auxiliary Actuators	Stainless Steel



Flat Leaf

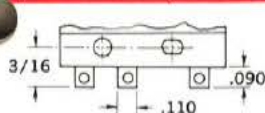


Roller

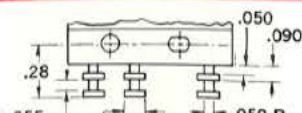


Simulated Roller

—LM standard ratio		—MM high ratio		—RB standard ratio		—TB high ratio		—RD standard ratio		—TD high ratio		—SB standard ratio		—UB high ratio		—SD standard ratio		—UD high ratio	
un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed	un-sealed	sealed
10	14	6	9	29	40	17	24	21	30	13	18	29	40	17	24	21	30	13	18
23	—	14	—	68	—	40	—	50	—	29	—	68	—	40	—	50	—	29	—
10	14	6	9	29	40	17	24	21	30	13	18	29	40	17	24	21	30	13	18
.337	.337	.565	.565	.114	.114	.197	.197	.156	.156	.266	.266	.114	.114	.196	.196	.156	.156	.266	.266
.345 ±.160	.345 ±.160	.345 ±.260	.345 ±.260	.565 ±.060	.565 ±.060	.565 ±.095	.565 ±.095	.565 ±.080	.565 ±.080	.565 ±.130	.565 ±.130	.460 ±.060	.460 ±.060	.460 ±.095	.460 ±.095	.460 ±.080	.460 ±.080	.460 ±.130	.460 ±.130
.150	.100	.170	.170	.050	.030	.055	.055	.070	.045	.080	.080	.050	.030	.055	.055	.070	.045	.080	.080
.235	.235	.300	.300	.020	.020	.035	.035	.035	.035	.055	.055	.020	.020	.035	.035	.035	.035	.055	.055
1.765	1.890	.250	.375	.535	.660	.245	.370	.535	.660	.245	.370	.535	.660	.245	.370	.535	.660	.245	.370

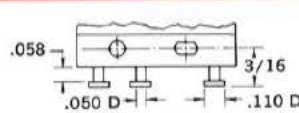


(CROSS DRILLED)
SOLDER (Code C)

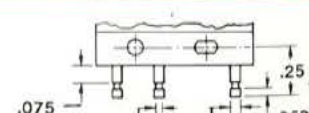


DOUBLE TURRET (Code D)

TERMINAL TYPES



SINGLE TURRET (Code S)

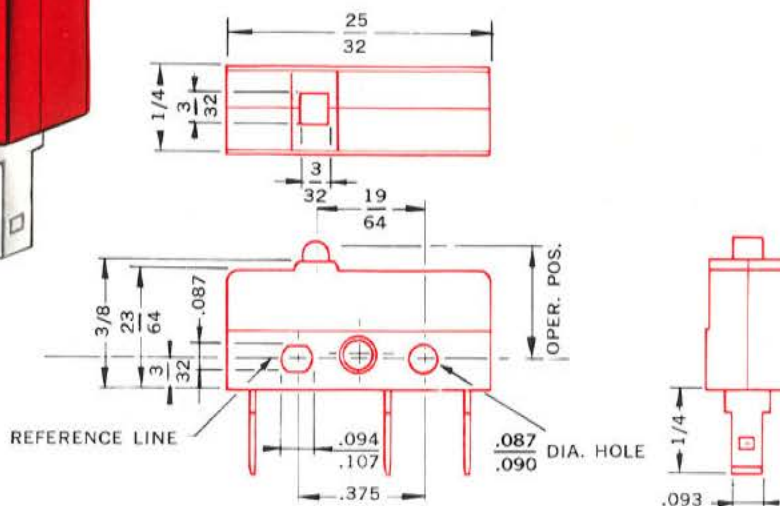
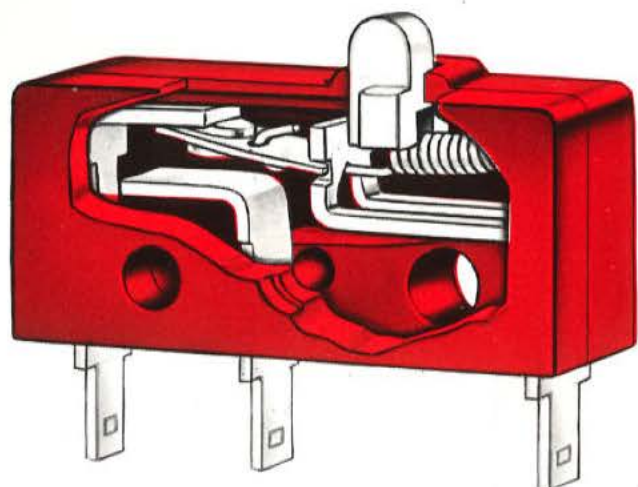


.058 PIN (Code P)

subminiature

SERIES E61—LIGHT FORCE

SERIES E62—STANDARD FORCE



RATING: E61—5 Amps., 125/250 VAC

RATING: E62—10.1 Amps., 125/250 VAC— $\frac{1}{4}$ H.P., 125 VAC

Und. Lab. Inc. listed, and CSA approved.



E61-00A/E62-00A

OPERATING FORCE E61 SERIES (Maximum Grams)

90

OPERATING FORCE E62 SERIES (Maximum Grams)

212

PRETRAVEL (Maximum inches)

.030

OPERATING POINT* (in inches)

.330 $\pm$.015

OVERTRAVEL (Minimum inches)

.035

MOVEMENT DIFFERENTIAL (Maximum inches)

.004

ACTUATOR LENGTH (Tolerance of $\pm \frac{1}{32}$ ")

—

REMARKS: *Measured above reference line

NOTE: Nominal button rest height is .353" $\pm$.015"

Also available with Gold Crosspoint Contacts for low energy switching applications . . . see pages 26 and 27.

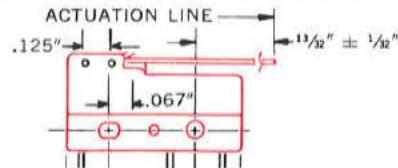
- Long Life Coil Spring Mechanism
- Large Overtravel
- Rock Wipe Contact Action
- Integral Hinged Actuator
- Small Compact Size
- Custom Designs

NOTE: .093" Quick Connect terminals are standard. To order solder terminals add 10 to suffix number. To order .110" Quick Connect terminals add 30 to suffix number. For example: The basic E61-00A becomes E61-10A for solder terminals and E61-30A for .110" QC terminals. See chart below.

TERMINAL TYPES	S.P.D.T.	S.P.S.T.N.O.	S.P.S.T.N.C.
.093" QC	E61-00A	E61-01A	E61-02A
SOLDER	E61-10A	E61-11A	E61-12A
.110" QC	E61-30A	E61-31A	E61-32A

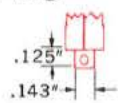
Also applies to E62 Series.

ACTUATORS—Many special forms and lengths of actuators are available with tooling charges applying. Standard type integral hinged lever and roller actuators are available in choice of 2 pivot positions. Actuator lengths are dimensioned from centerline of switch mounting hole as shown.

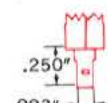


CIRCUITRY—Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02. Example: E61-00A is double throw, E61-01A is normally open, and E61-02A is normally closed. (Note: Ganged modules to provide 2, 3, 4, and 5 switches side by side are available).

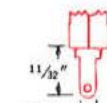
TERMINALS—Subminiature series is available with quick connect .093" wide (mates with AMP part no. 60432-1) and .110" wide (mates with AMP part no. 42399-2). Also available in short solder terminal .139" wide x .125" long.



SHORT SOLDER



Q.C.



Q.C.

MATERIALS	
PARTS	SERIES E61 & SERIES E62
Case	General purpose phenolic
Actuating button	Acetal
Common terminal	Plated Copper Alloy (.00002 to .00005 thick)
NO and NC terminals	Plated Copper Alloy (.00002 to .00005 thick)
Moving blade	Beryllium
Contacts	Silver
Spring	Stainless Steel
Auxiliary Actuators	Cold-Rolled Steel— White Nickel Plated (.00002 to .00005 thick)



E61-00H/E62-00H



E61-50H/E62-50H



E61-00K/E62-00K



E61-50K/E62-50K

24

8

26

9

56

20

65

22

5/32"

7/16"

9/64"

13/32"

.350 ± .030

.350 ± .030

.570 ± .030

.570 ± .030

.040

.050

.030

.040

.020

.050

.020

.050

9/32"

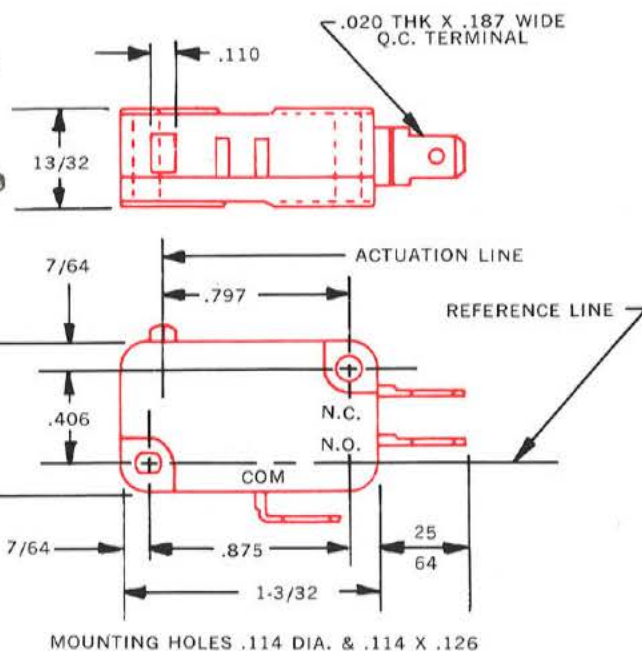
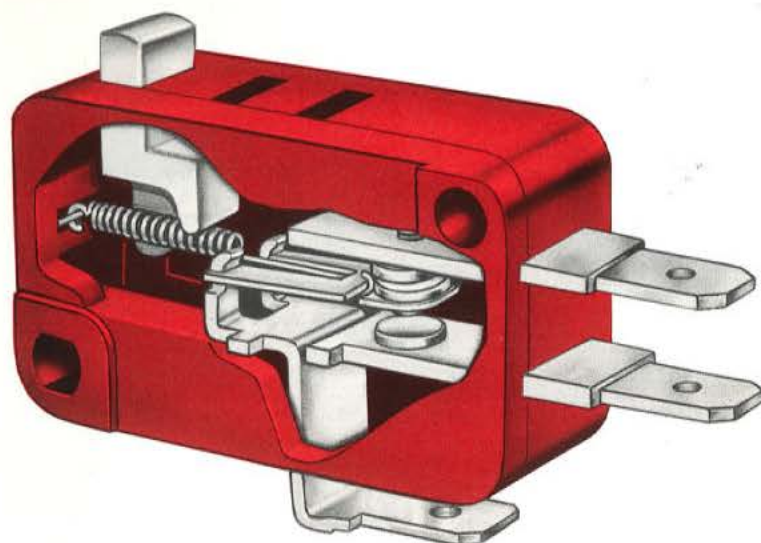
13/32"

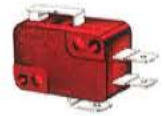
13/64"

21/64"

standard force/miniature

SERIES E22 SERIES E33
SERIES E23 SERIES E34



RATING: E22— 3 Amps., 125/250 VAC RATING: E23— 5 Amps., 1/4 H.P., 125/250 VAC RATING: E33—10 Amps., 1/2 H.P., 125/250 VAC RATING: E34—15 Amps., 1/2 H.P., 125/250 VAC Und. Lab. Inc. listed, and CSA approved.	 -00A	 -00H	 -50H
OPERATING FORCE E22 (Max. Gms.)	75	75	35
OPERATING FORCE E23 (Max. Gms.)	170	170	86 10
OPERATING FORCE E33 (Max. Gms.)	285 5	285	144
OPERATING FORCE E34 (Max. Gms.)	400	400	200
PRETRAVEL (Max. inches)	.047	.062	.125
OPERATING POINT* (in inches)	.578 ± .020	.600 ± .020	.600 ± .045
OVERTRAVEL (Minimum inches)	.050	.050	.090
MOVEMENT DIFFERENTIAL (Max. inches)	.010	.016	.030
ACTUATOR LENGTH (Tolerance of ± 1/32")	—	27/32"	1 13/32"
REMARKS: *Measured above reference line NOTE: Nominal button rest height is 3 3/64" Also available with Gold Crosspoint Contacts for low energy switching applications . . . see pages 26 and 27.			

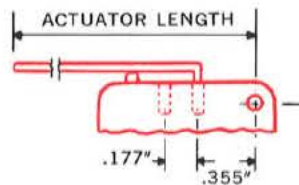
- Long Life Coil Spring Mechanism
- Large Overtravel
- Rock Wipe Contact Action
- Wide Rounded Wear Resistant Button
- Integral Hinged Actuators
- Custom Designs

NOTE: .187" Quick Connect terminals are standard. To order screw terminals add 10 to suffix number. To order solder terminals add 20 to suffix number. For example: The basic E23-00A becomes E23-10A for screw terminals and E23-20A for solder terminals. See chart below.

TERMINAL TYPES	S.P.D.T.	S.P.S.T.N.O.	S.P.S.T.N.C.
QC	E23-00A	E23-01A	E23-02A
SCREW	E23-10A	E23-11A	E23-12A
SOLDER	E23-20A	E23-21A	E23-22A

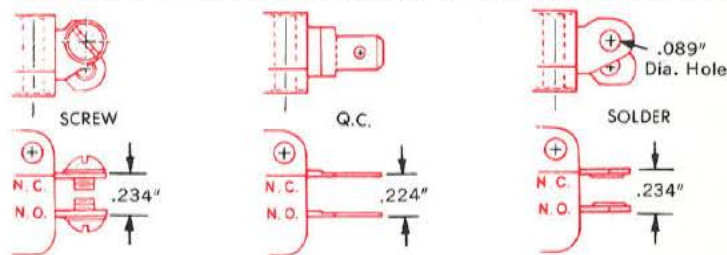
Also applies to E22, E33 and E34 Series.

ACTUATORS—Many special forms and lengths of actuators are available with tooling charges applying. Standard type integral hinged lever and roller actuators are available in choice of 2 pivot positions. Actuator lengths are dimensioned from centerline of switch mounting hole as shown here.



CIRCUITRY—Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02. Example: E34-00A is double throw, E34-01A is normally open and E34-02A is normally closed.

TERMINALS—Choice of Screw, Solder, or Quick Connect Terminals. Unless otherwise specified switches are furnished with QC terminals .187 wide x .020 thick. Also available are .250 wide x .032 QC terminals.



MATERIALS

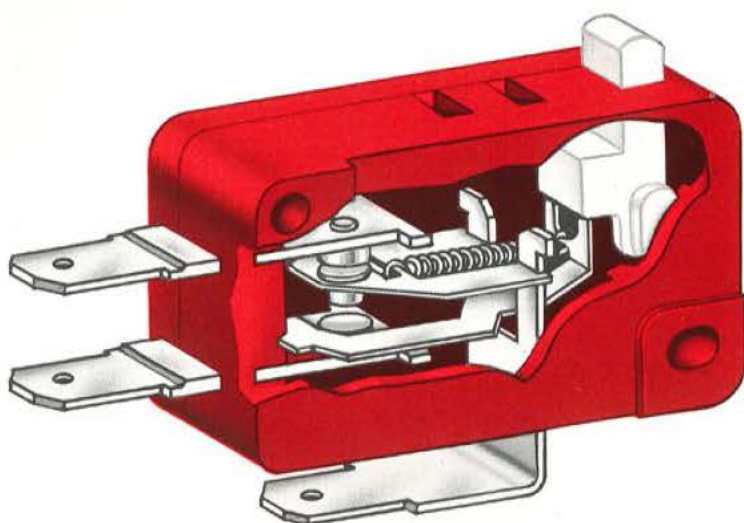
PARTS	SERIES E22	SERIES E23, E33	SERIES E34
Case	General purpose phenolic	General purpose phenolic	General purpose phenolic
Actuating button	Acetal Resin	Acetal Resin	Acetal Resin
Common terminal	Silver Plated Brass (.00002 to .00005 thick)	Silver Plated Brass (.00002 to .00005 thick)	Silver Plated Brass (.00002 to .00005 thick)
NO and NC terminals	Brass (70% Copper, 30% Zinc)	Brass (70% Copper, 30% Zinc)	Copper
Moving blade	Spring Brass	E23 Spring Brass, E33 Silver Plated Beryllium Copper	Silver Plated Beryllium Copper (.00002 to .00005 thick)
Contacts	Fine Silver	Silver Cadmium Oxidized	Silver-Cadmium Oxidized
Spring	Stainless Steel	Stainless Steel	Stainless Steel
Auxiliary Actuators	Aluminum used on 2 1/4" Long actuator	Cold Rolled Steel-White Nickel Plated (.00002 to .00005 thick)	Cold Rolled Steel-White Nickel Plated (.00002 to .00005 thick)
Roller		Sintered Stainless Steel	Sintered Stainless Steel

				
-50HL	-00K	-50K	-50KL	-50P
15	75	35	15	35
51	170	86	51	86
86	285	144	86	144
120	400	200	120	200
.200	.047	.125	.200	.125
.600 ± .062	.806 ± .030	.806 ± .045	.806 ± .062	1.045 ± .045
.140	.040	.085	.140	.085
.050	.010	.030	.050	.030
1 9/16"	1 3/16"	1 11/32"	1 1/2"	1 11/32"

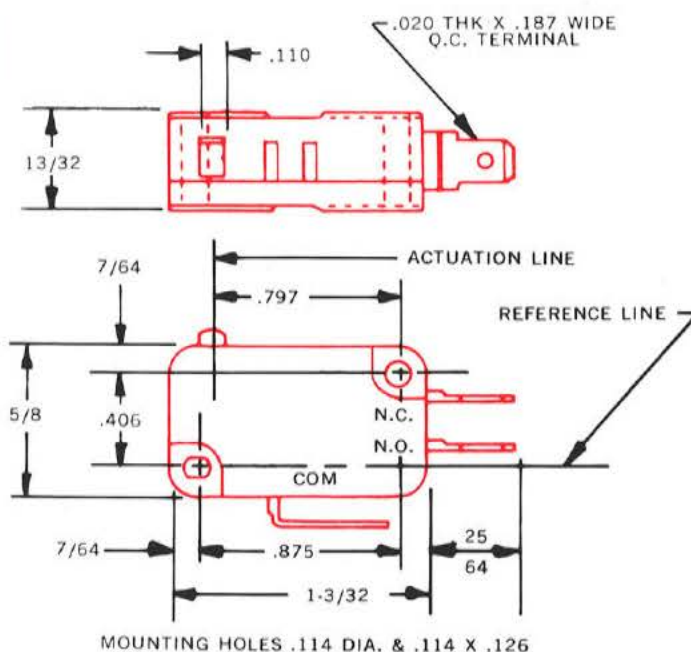
light force/miniature

SERIES E22—SERIES E23

SERIES E33—SERIES E34



Added internal actuator increases leverage, reduces operating force while maintaining high contact pressure.



RATING: E22 Series—3 Amp., 125/250 VAC

RATING: E23 Series—5 Amp., 1/4 H.P., 125/250 VAC

RATING: E33 Series—10 Amp., 1/2 H.P., 125/250 VAC

RATING: E34 Series—15 Amp., 1/2 H.P., 125/250 VAC

Und. Lab. Inc. listed, and CSA approved.



—00AX



—50HX

E22 OPERATING FORCE (Max. in grams)

15

8

E23 OPERATING FORCE (Max. in grams)

45

22

E33 OPERATING FORCE (Max. in grams)

75

37

E34 OPERATING FORCE (Max. in grams)

100

50

PRETRAVEL (Max. in inches)

.047

.125

OPERATING POINT * (in inches)

.578 ± .020

.600 ± .045

OVERTRAVEL (Minimum in inches)

.050

.090

MOVEMENT DIFFERENTIAL (Max. in inches)

.010

.030

ACTUATOR LENGTH (Tolerances of ± 1/32")

—

1 13/32"

REMARKS: *Measured above reference line

NOTE: Nominal button rest height is 3/16"

Also available with Gold Crosspoint Contacts for low energy switching applications . . . see pages 26 and 27.

- Low Operating Force
- Long Life Coil Spring Mechanism
- Large Overtravel
- Rock Wipe Contact Action
- Integral Hinged Actuators
- Custom Designs

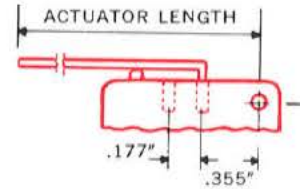
NOTE: .187" Quick Connect terminals are standard. Normally, to order screw terminals add 10 to suffix number. To order solder terminals add 20 to suffix number. For example: The basic E22-00AX becomes E22-10AX for screw terminals and E22-20AX for solder terminals. See chart below.

EXCEPTIONS: When ordering —55HX, —75HX, —75KX or —85HX switches, do **not** change suffix number. Simply state on order whether QC, screw or solder terminal types are desired.

TERMINAL TYPES	S.P.D.T.	S.P.S.T.N.O.	S.P.S.T.N.C.
QC	E22-00AX	E22-01AX	E22-02AX
SCREW	E22-10AX	E22-11AX	E22-12AX
SOLDER	E22-20AX	E22-21AX	E22-22AX

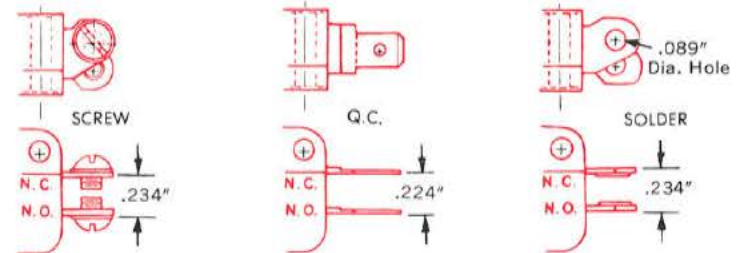
Also applies to E23, E33 and E34 Series.

ACTUATOR—Many special forms and lengths of actuators are available with tooling charges applying. Standard type integral hinged lever and roller actuators are available in choice of 2 pivot positions. Actuator lengths are dimensioned from centerline of switch mounting hole as shown here.



CIRCUITRY—Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02. Example: E22-00AX is double throw, E22-01AX is normally open and E22-02AX is normally closed.

TERMINALS—Choice of Screw, Solder, or Quick Connect Terminals. Unless otherwise specified switches are furnished with QC terminals .187 wide x .020 thick. Also available are .250 wide x .032 QC terminals.



MATERIALS			
PARTS	SERIES E22	SERIES E23, E33	SERIES E34
Case	General purpose phenolic	General purpose phenolic	General purpose phenolic
Actuating button	Acetal Resin	Acetal Resin	Acetal Resin
Common terminal	Silver Plated Brass (.00002 to .00005 thick)	Silver Plated Brass (.00002 to .00005 thick)	Silver Plated Brass (.00002 to .00005 thick)
NO and NC terminals	Brass (70% Copper, 30% Zinc)	Brass (70% Copper, 30% Zinc)	Copper
Moving blade	Spring Brass	E23 Spring Brass	Silver Plated Beryllium Copper (.00002 to .00005 thick)
Contacts	Fine Silver	E33 Silver Plated Beryllium Copper	Silver-Cadmium Oxidized
Spring	Stainless Steel	Silver Cadmium Oxidized	Stainless Steel
Auxiliary Actuators	Aluminum used on 2 3/4" Long actuator	Stainless Steel	Cold Rolled Steel-White Nickel Plated (.00002 to .00005 thick)
Roller		Cold Rolled Steel-White Nickel Plated (.00002 to .00005 thick)	Sintered Stainless Steel
		Sintered Stainless Steel	



—75HX



—50KX



—75KX



—55HX



—85HX

5

14

22

30

.200

.600 ± .062

.140

.050

1 9/16"

—

22

37

50

.125

.806 ± .045

.090

.030

1 11/32"

—

14

22

30

.200

.806 ± .062

.140

.050

1 1/2"

3 1/2

10

17

22

.300

.600 ± .078

.187

.065

2 3/4"

2

6

10

13

.500

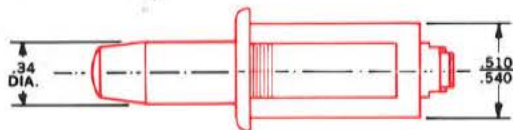
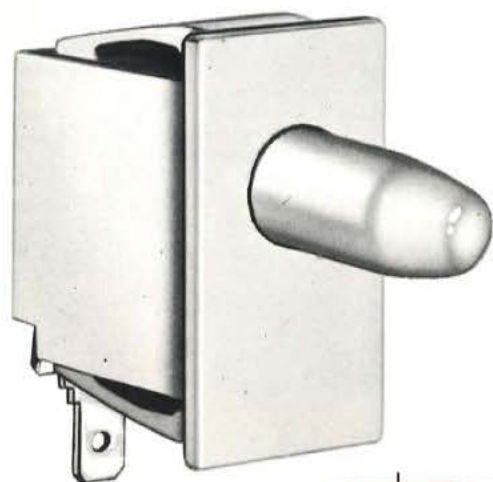
.600 ± .125

.312

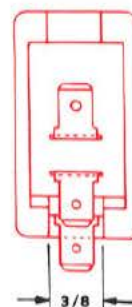
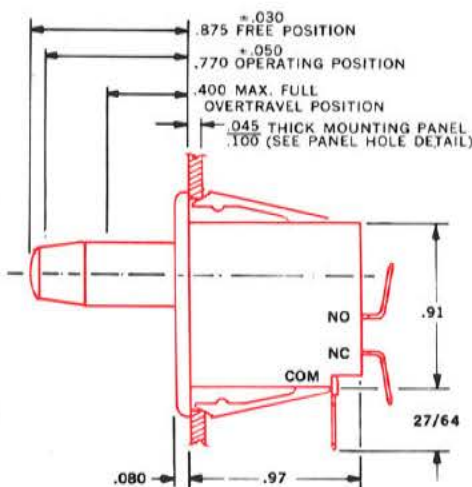
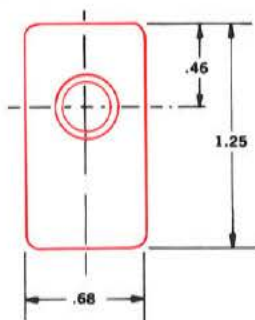
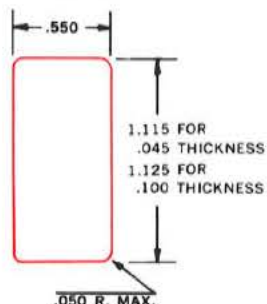
.100

2.932"

panel mount pushbutton/single pole



PANEL HOLE DETAIL



RATING: 10 amp, 125/250 VAC
1/3 H.P. 125/250 VAC

Und. Lab. Inc. listed, and CSA approved.

REST POSITION

PRETRAVEL Max. (in inches)

OPERATING POINT*

OVERTRAVEL Min. (in inches)

MOVEMENT DIFFERENTIAL Max.

OPERATING FORCE Max.

FULL OVERTRAVEL POSITION Max. (in inches) "A" Dimension



E69-00A
Basic Momentary Action



E69-40A
Short Button Momentary

.845 — .905

.125

.720 — .820

.375

.045

15 oz.

.400

.420 — .480

.125

.300 — .400

.175

.045

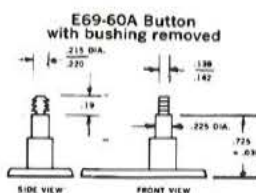
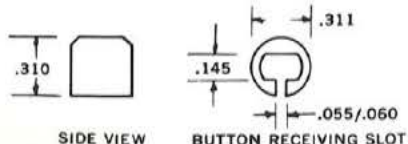
15 oz.

.125

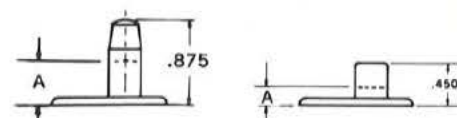
REMARKS: *Measured above reference line.

Also available with Gold Crosspoint Contacts for low energy switching applications ... see pages 26 and 27.

BUSHING DETAIL



BUTTON DETAIL



MOMENTARY-PUSH-PULL (RESET)—"CHEAT" INTERLOCK-PUSH-PUSH

- Rock-Wipe Contact Action
- Custom Designs
- Snap-in Panel Mounting
- Large Overtravel
- Long-Life Coil Spring Snap-Action Mechanism

ALSO AVAILABLE WITH GOLD CROSSPOINT CONTACTS

Gold alloy contact prisms welded to contact brackets, at right angles to each other, make low energy switching possible without the necessity of redesigning. Metallurgically bonded contacts contribute to reliable performance in applications from 5 to 100 milliamperes at 4 to 30 volts. Initial insertion resistance far below 50 milliohms.

CIRCUITRY— Available in single pole double throw or single pole single throw. Double pole panel mount switches also available. (See pages 16-17 for complete information.)

TERMINALS— This switch series has quick connect terminals .187" x .020".

APPLICATIONS— Door and drawer light/interlock switch; test function switch; EDP and business machine start switch; photocopy machines and other equipment requiring either manual or mechanical actuation and panel mounting.

Switch E69-50A has button with special shaft to accept auxiliary push buttons for manual actuation.

MATERIALS

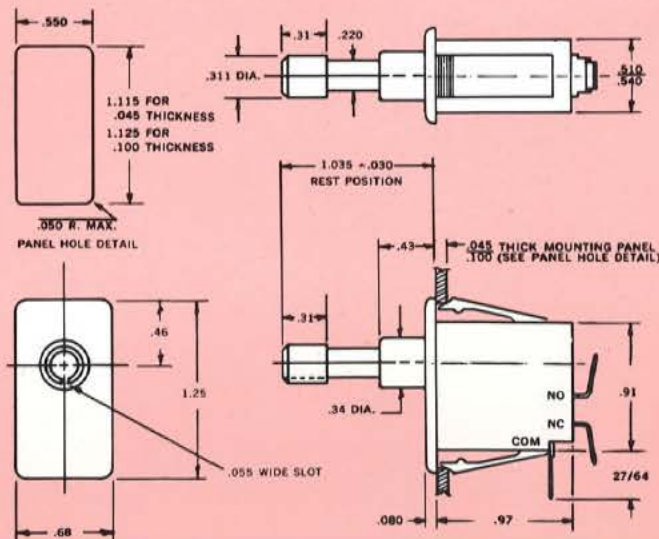
Case	White Nylon
Actuating Button	White Acetal
Terminals	Brass
Moving Blade	Beryllium Copper
Contacts	Silver Cadmium Oxidized
Spring	Stainless Steel



SINGLE POLE PUSH-PUSH PANEL MOUNT SWITCH E69-60A

OPERATING CHARACTERISTICS

Rest Position	1.030 ± .035
Pretravel	.250 Stroke
Full Overtravel	.750 ± .030
Operating Force	30 oz. Max.
Electrical Rating	10 Amp, 125/250 VAC 1/2 H.P. 125/250 VAC
Und. Lab. Inc. listed, and CSA approved.	



E69-50A



For Auxiliary Push Button

.420 — .480

.125

.300 — .400

.175

.045

15 oz.

.125

E69-20A



Push-Pull (Reset)

.920 — .980

.150

.800 — .900

.300

.045

8 oz.

.500

E69-30A



Momentary "Cheat" Interlock

.730 — .790

.125

.710 — .610

.100

.045

15 oz.

.520

E69-60A



Push-Push (Alt Action)

.995 — 1.065

.250

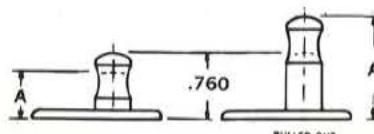
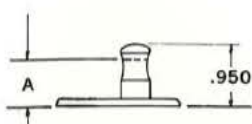
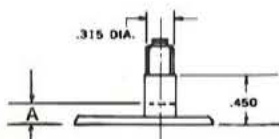
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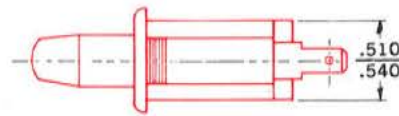
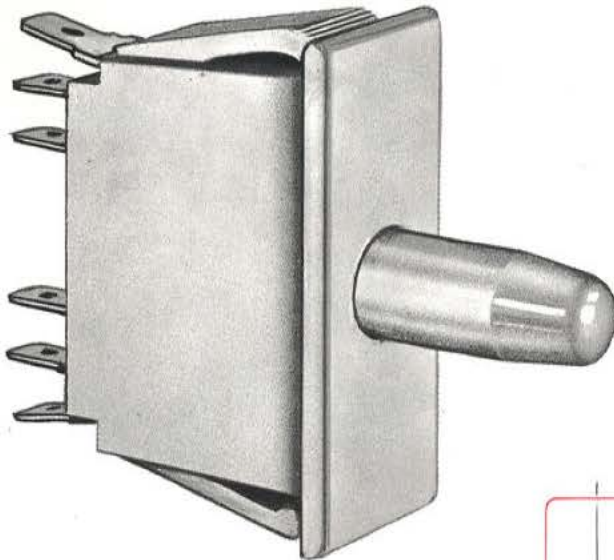
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30 oz.

.780

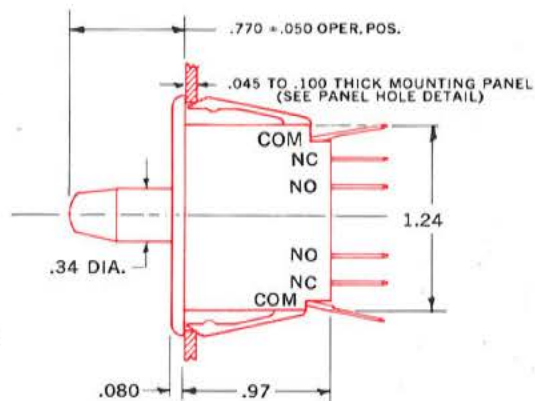
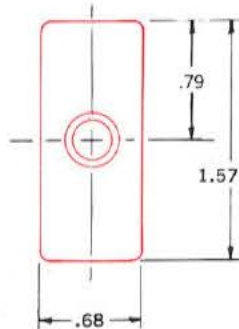
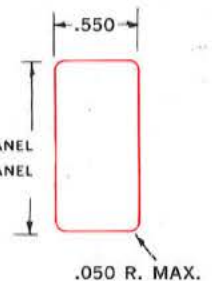


panel mount pushbutton/double pole



CUT OUT 1.445 FOR .045 THICK PANEL
CUT OUT 1.455 FOR .100 THICK PANEL

PANEL HOLE DETAIL



RATING: 10 Amp, 125/250 VAC
1/3 H. P. 125/250 VAC

Und. Lab. Inc. listed, and CSA approved.

E79-00A



Basic Momentary Action

E79-40A

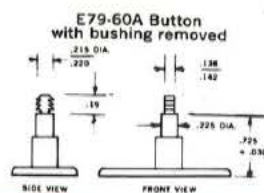
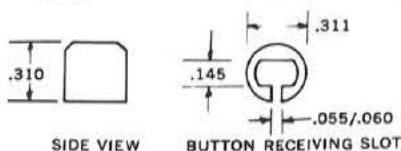


Short Button Momentary

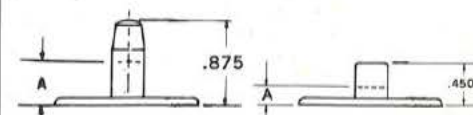
	E79-00A	E79-40A
REST POSITION (in inches)	.845—.905	.420—.480
PRETRAVEL Maximum (in inches)	.125	.125
OPERATING POINT* (in inches)	.720—.820	.300—.400
OVERTRAVEL Minimum (in inches)	.375	.175
MOVEMENT DIFFERENTIAL Maximum (in inches)	.075	.075
OPERATING FORCE Maximum	24 oz.	24 oz.
FULL OVERTRAVEL POSITION Maximum (in inches) "A" Dimension	.400	.125

REMARKS: *Measured above reference line
Also available with Gold Crosspoint Contacts for low energy switching applications ... see pages 26 and 27.

BUSHING DETAIL



BUTTON DETAIL



MOMENTARY-PUSH-PULL (RESET) — "CHEAT" INTERLOCK — "PUSH-PUSH"

- Rock-Wipe Contact Action
- Custom Designs
- Snap in Panel Mounting
- Large Overtravel
- Long Life Coil Spring Snap-Action Mechanism

ALSO AVAILABLE WITH GOLD CROSSPOINT CONTACTS

Gold alloy contact prisms welded to contact brackets, at right angles to each other, make low energy switching possible without the necessity of redesigning. Metallurgically bonded contacts contribute to reliable performance in applications from 5 to 100 milliamperes at 4 to 30 volts. Initial insertion resistance far below 50 milliohms.

CIRCUITRY—Available in double pole double throw or double pole single throw. Single pole panel mount switches also available. (See pages 14-15 for complete information.)

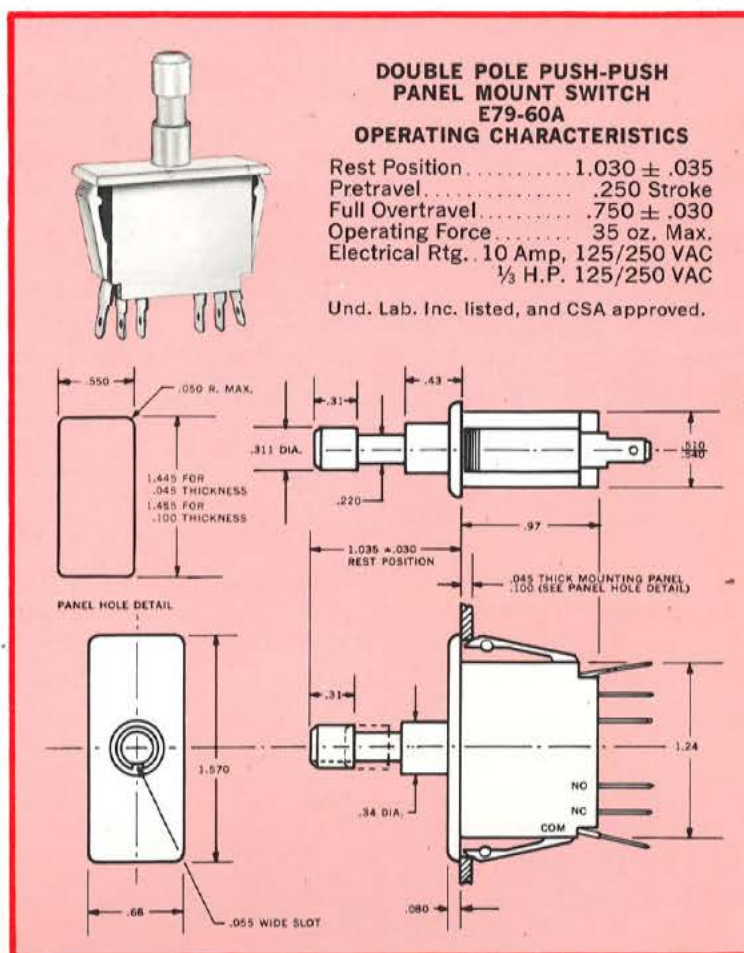
TERMINALS—This switch series has quick connect terminals .187" x .020".

APPLICATIONS—Door and drawer light/interlock switch; test function switch; EDP and business machine start switch; photo-copy machines and other equipment requiring either manual or mechanical actuation and panel mounting.

Switch E79-50A has button with special shaft to accept auxiliary push buttons for manual actuation.

MATERIALS

Case	White Nylon
Actuating Button	White Acetal
Terminals	Brass
Moving Blade	Beryllium Copper
Contacts	Silver Cadmium Oxidized
Spring	Stainless Steel



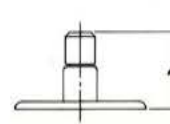
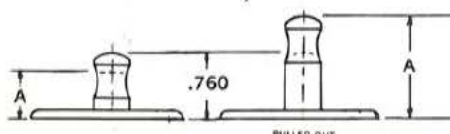
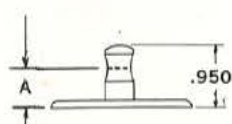
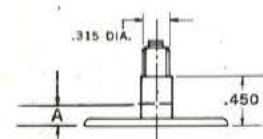
DOUBLE POLE PUSH-PUSH PANEL MOUNT SWITCH E79-60A

OPERATING CHARACTERISTICS

Rest Position	1.030 ± .035
Pretravel	.250 Stroke
Full Overtravel	.750 ± .030
Operating Force	35 oz. Max.
Electrical Rtg.	10 Amp, 125/250 VAC 1/3 H.P. 125/250 VAC

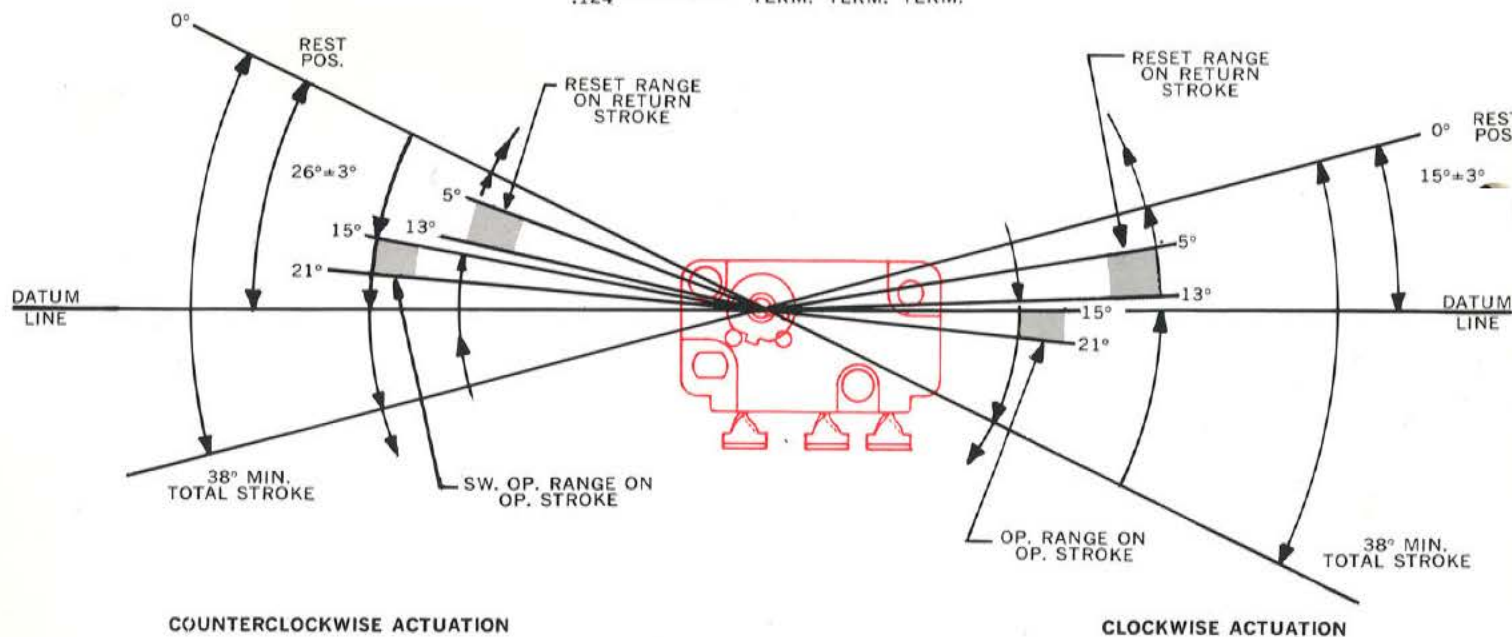
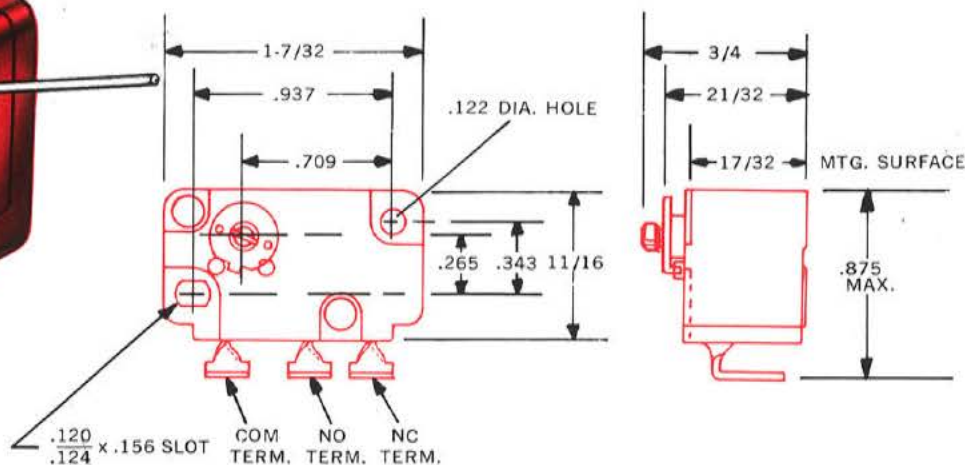
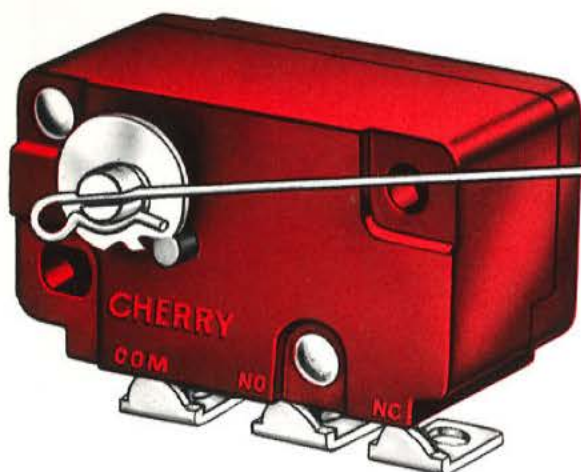
Und. Lab. Inc. listed, and CSA approved.

E79-50A	E79-20A	E79-30A	E79-60A
For Auxiliary Pushbutton	Push-Pull (Reset)	Momentary "Cheat" Interlock	Push-Push (Alt. Action)
.420—.480	.920—.980	.730—.790	.995—1.065
.125	.150	.125	.250 Stroke
.300—.400	.800—.900	.710—.610	—
.175	.300	.100	—
.075	.075	.075	—
24 oz.	18 oz.	26 oz.	35 oz.
.125	.500	.520	.780



low torque switches

SERIES E51



RATING: E51—5 amps., 125/250 VAC

Und. Lab. Inc. listed, and CSA approved.



E51-00B

E51-00R



E51-00E

E51-00T

DIRECTION OF ACTUATOR

Clockwise

Clockwise

Counter
Clockwise

Counter
Clockwise

TERMINALS

Standard
Parallel
.205"

Standard
Parallel
.187"

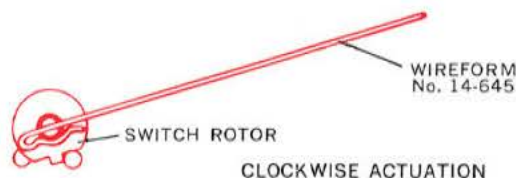
Standard
Parallel
.205"

Standard
Parallel
.187"

REMARKS: Also available with Gold Crosspoint Contacts for low energy switching applications . . . see pages 26 and 27.

- Long Life Coil Spring Mechanism
- Low Torque Rotary Actuation
- Clockwise or Counter Clockwise
- Rock Wipe Contact Action
- Combination Quick Connect & Solder Terminals
- Double Rivet Sturdy Case Construction

ACTUATORS—Wireform actuators are supplied unassembled for each E51 switch. Wireforms may be readily assembled to switch rotor as illustrated below.



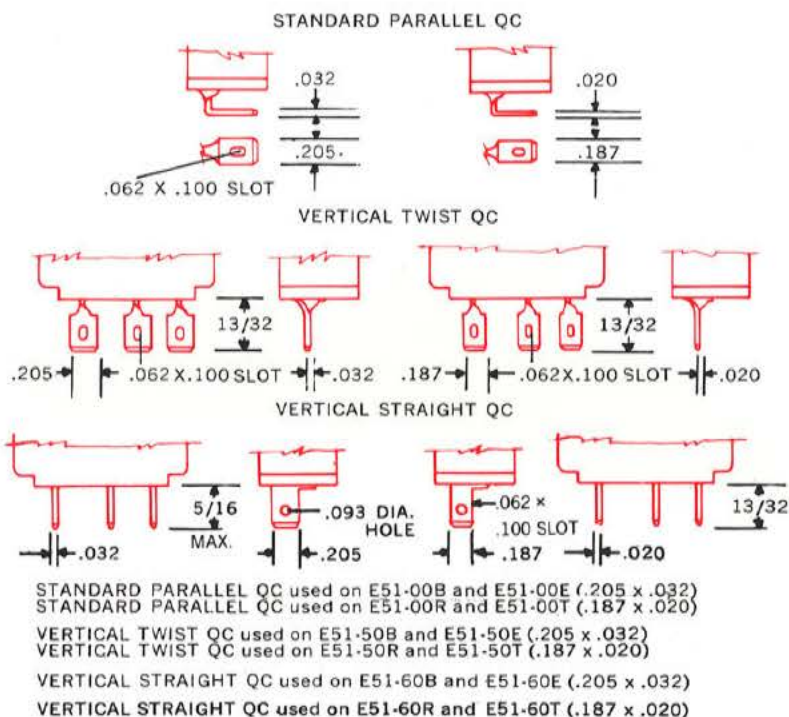
CIRCUITRY—E51 series is available in single pole double throw and single pole single throw either normally open or normally closed. In general normally open may be specified by adding 01 to suffix numbers, and normally closed by adding 02. For example E51-00B is double throw, E51-01B is normally open and E51-02B is normally closed.

TERMINALS—All terminals are combination quick connect and solder. Several types are available as shown below.

ALL E51 SERIES SWITCHES HAVE THESE CHARACTERISTICS:

OPER. TORQUE MAX. 4.0 inch grams
 OVERTRAVEL 15° Min.
 MOVEMENT DIFF. 3° Min.

MATERIAL	
PARTS	E51 SERIES
Case	General purpose phenolic
Common terminal	Silver Plated Brass (.00002 to .00005 thick.)
NO and NC terminals	Silver Plated Brass (.00002 to .00005 thick.)
Moving blade	Spring Brass
Contacts	Gold Flashed (.00003 to .00004 thick.) Silver-Cadmium Oxidized.
Spring	Stainless Steel

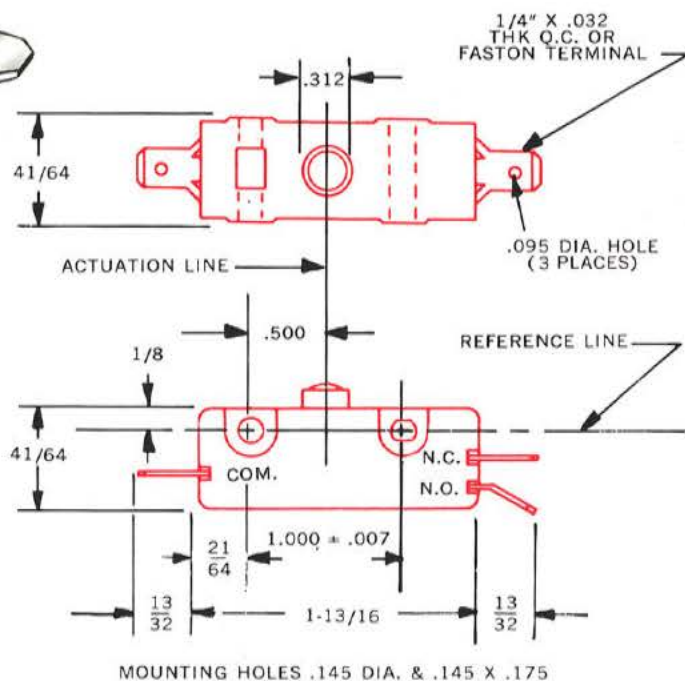
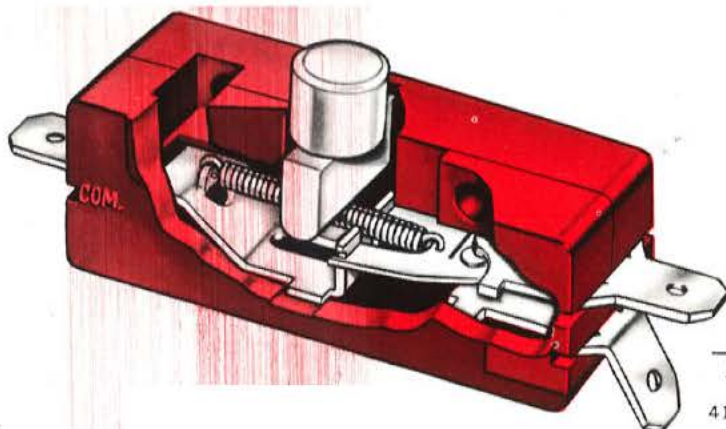


E51-50B		E51-50R		E51-50E		E51-50T		E51-60B		E51-60R		E51-60E		E51-60T	
Clockwise	Clockwise	Counter Clockwise	Counter Clockwise	Clockwise	Clockwise	Counter Clockwise	Counter Clockwise	Clockwise	Clockwise	Counter Clockwise	Counter Clockwise	Clockwise	Clockwise	Counter Clockwise	Counter Clockwise
Vertical Twist .205"	Vertical Twist .187"	Vertical Twist .205"	Vertical Twist .187"	Vertical Straight .205"	Vertical Straight .187"	Vertical Straight .205"	Vertical Straight .187"	Vertical Twist .205"	Vertical Twist .187"	Vertical Twist .205"	Vertical Twist .187"	Vertical Straight .205"	Vertical Straight .187"	Vertical Straight .205"	Vertical Straight .187"

general purpose

SERIES E13—STANDARD

SERIES E14—HIGH CAPACITY



MOUNTING HOLES .145 DIA. & .145 X .175

RATING: E13—15 amps 125/250 VAC
 $\frac{3}{4}$ H.P., 125 VAC—1 $\frac{1}{2}$ H.P., 250 VAC
RATING: E14—25 amps 125/250 VAC
 1 H.P., 125 VAC—2 H.P., 250 VAC
 Und. Lab. Inc. listed, and CSA approved.



E13-00E



E14-00A



E13-00R



E13-00J

OPERATING FORCE (Max. in ozs.)

15

30

11

15

PRETRAVEL (Max. inches)

.050

.100

.080

.050

OPERATING POINT* (in inches)

.285±.020

.248±.020

.269±.030

.670±.030

OVERTRAVEL (Min. inches)

.100

.050

.032

.100

MOVEMENT DIFFERENTIAL (Max. inches)

.015

.015

—

.015

Reset Button Pretravel (Max. inches)

—

—

.040

—

Reset Button Operating Point

—

—

.670±.030

—

ACTUATOR LENGTH (Tolerance ± $\frac{1}{32}$ ")

—

—

—

—

REMARKS: *Measured above reference line.

NOTE: Nominal button rest height is $\frac{21}{64}$ "

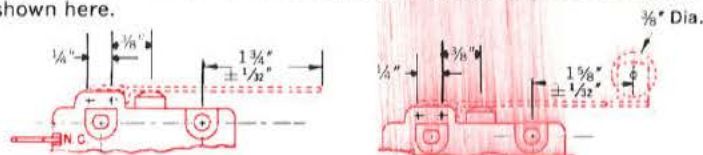
Also available with Gold Crosspoint Contacts for low energy switching applications . . . see pages 26 and 27.

NOTE: Reset button $\frac{1}{64}$ " diameter

NOTE: Ferrule on "J" and "M" type is $\frac{3}{16}$ "-32 NEF thread with .312" flats .406" high

- Long Life Coil Spring Mechanism
- Large Overtravel
- Rock Wipe Contact Action
- Wear Resistant Nylon Button
- Integral Hinged Actuators
- Custom Designs

ACTUATORS—Many special forms and lengths of actuators are available with tooling charges applying. Standard type integral hinged lever and roller actuators are available in choice of 2 pivot positions. Actuator lengths are dimensioned from centerline of switch mounting hole as shown here.



CIRCUITRY—Contact arrangement available in choice of single pole double throw or single pole single throw, either normally open or normally closed. In general normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02. Example: E13-00E is double throw, E13-01E is normally open, and E13-02E is normally closed.

TERMINALS—Standard 1/4 inch QC terminals can be furnished with angle formed up or down on common as well as open or closed terminal. Forms include straight, 30, 45, 85 degrees up or down. Other forms can be provided at nominal extra charge.

BUTTON VARIATIONS—Several button lengths are available without extra charge. Special button lengths, forms and colors may be had with nominal set-up and/cr tooling charge.

MATERIALS

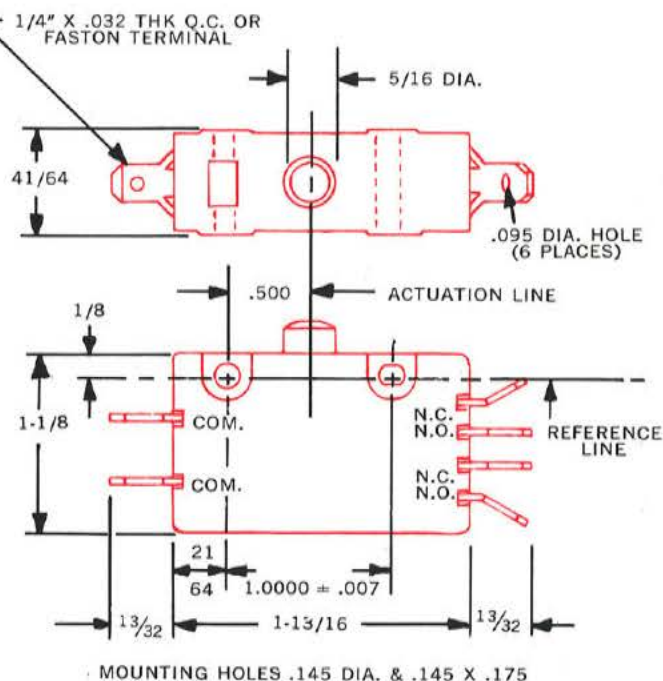
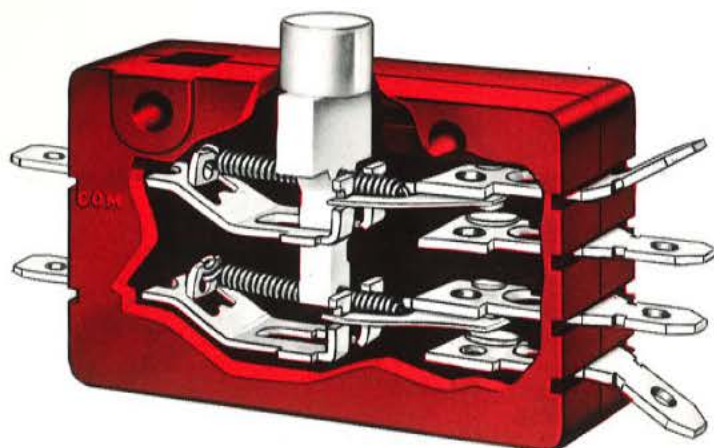
PARTS	SERIES E13	SERIES E14
Case	General purpose phenolic	General purpose phenolic
Actuating button	Nylon	Nylon
Common terminal	Brass (70% Copper, 30% Zinc)	Silver Plated Brass (.00002 to .00005 thick)
NO and NC terminals	Brass (70% Copper, 30% Zinc)	Copper
Moving Blade	Spring Brass	Silver Plated Berylico (.00002 to .00005 thick)
Contacts	Silver-Cadmium Oxidized	Silver-Cadmium Oxidized
Spring	Stainless steel	Stainless steel
Aux. Actuators	Cold-Rolled Steel—White Nickel Plated (.00002 to .00005 thick)	Cold-Rolled Steel—White Nickel Plated (.00002 to .00005 thick)
Roller	Sintered Stainless Steel	Sintered Stainless Steel

								
E13-00M	E13-00H	E14-00H	E13-50H	E14-50H	E13-00K	E14-00K	E13-50K	E14-50K
15	3 1/2	10	2 1/4	6	3 1/2	10	2 1/4	6
.050	.250	.312	.343	.525	.250	.291	.343	.483
.812±.030	.312±.062	.468±.062	.281±.062	.437±.062	.718±.062	.860±.062	.687±.062	.828±.062
.218	.187	.150	.187	.234	.187	.130	.187	.218
.015	.093	.050	.140	.080	.093	.045	.140	.073
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—
—	1 1/2"	2 7/32"	1 3/4"	1 3/32"	1 3/8"	1 1/16"	1 5/8"	1 5/16"

general purpose / double pole

SERIES E19—STANDARD

SERIES E20—HIGH CAPACITY



RATING: E19—15 amps 125/250 VAC
3/4 H.P., 125 VAC—1½ H.P., 250 VAC

RATING: E20—20 amps 125/250 VAC
1 H.P., 125 VAC—2 H.P., 250 VAC

Und. Lab. Inc. listed, and CSA approved.



E19-00A



E20-00A



E19-00R

E19-00H

E20-00H

	E19-00A	E20-00A	E19-00R	E19-00H	E20-00H
OPERATING FORCE (Max. in ozs.)	30	45	22	7	15
PRETRAVEL (Max. in inches)	.050	.100	.080	.275	.330
OPERATING POINT (in inches)	.285±.030	.248±.030	.269±.030	.312±.062	.468±.062
OVERTRAVEL (Min. in inches)	.080	.050	.032 (either direction)	.187	.156
MOVEMENT DIFFERENTIAL (Max. in., ea. pole)	.015	.015	—	.093	.050
Reset Button Pretravel (Max. in inches)	—	—	.080	—	—
Reset Button Operating Point (in inches)	—	—	1.156±.030	—	—
ACTUATOR LENGTH (Tolerance ± 1/32")	—	—	—	1½"	27/32"

REMARKS: *Measured above reference line

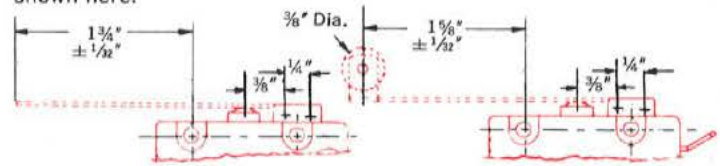
NOTE: Nominal button rest height is 21/64"

NOTE: Reset button 1/8" diameter

Also available with Gold Crosspoint Contacts for low energy switching applications . . . see pages 26 and 27.

- Double Circuit Control
- Long Life Coil Spring Mechanism
- Rock Wipe Contact Action
- Wear Resistant Nylon Button
- Integral Hinged Actuators
- Custom Designs

ACTUATORS—Many special forms and lengths of actuators are available with tooling charges applying. Standard type integral hinged lever and roller actuators are available in choice of 2 pivot positions. Actuator lengths are dimensioned from centerline of switch mounting hole as shown here.



CIRCUITRY—Contact arrangement available in choice of double pole double throw or double pole single throw either normally open or normally closed. In general normally open may be specified by changing suffix number from 00 to 01 and normally closed by changing suffix number to 02. Example: E19-00J is double throw, E19-01J is normally open, and E19-02J is normally closed.

TERMINALS—Standard 1/4 inch QC terminals can be furnished with angle formed up or down on common as well as open or closed terminal. Forms include straight, 30, 45, 85 degrees up or down. Other forms can be provided at nominal extra charge.

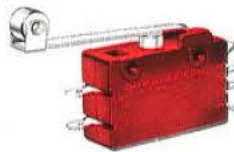
BUTTON VARIATIONS—Several button lengths are available without extra charge. Special button lengths, forms and colors may be had with nominal set-up and/or tooling charge.

MATERIALS

PARTS	SERIES E19	SERIES E20
Case	General purpose phenolic	General purpose phenolic
Actuating button	Nylon	Nylon
Common terminal	Brass (70% Copper, 30% Zinc)	Silver Plated Brass (.00002 to .00005 thick)
NO and NC terminals	Brass (70% Copper, 30% Zinc)	Copper
Moving Blade	Spring Brass	Silver Plated Berylco (.00002 to .00005 thick)
Contacts	Silver-Cadmium Oxidized	Silver-Cadmium Oxidized
Spring	Stainless steel	Stainless steel
Aux. Actuators	Cold-Rolled Steel—White Nickel Plated (.00002 to .00005 thick)	Cold-Rolled Steel—White Nickel Plated (.00002 to .00005 thick)
Roller	Sintered Stainless Steel	Sintered Stainless Steel



E19-50H



E20-50H



E19-00K

E20-00K



E19-50K

E20-50K



E19-00J

E20-00J

E19-00M

4 1/2

10

7

15

4 1/2

11

30

45

30

.400

.600

.250

.312

.312

.525

.050

.100

.050

.281±.062

.437±.062

.718±.062

.860±.062

.687±.062

.828±.062

.670±.030

.630±.030

.812±.030

.187

.156

.187

.156

.187

.146

.080

.050

.218

.140

.080

.093

.045

.140

.075

.015

.015

.015

1 3/4"

1 3/32"

1 3/8"

1 1/16"

1 5/8"

1 5/16"

—

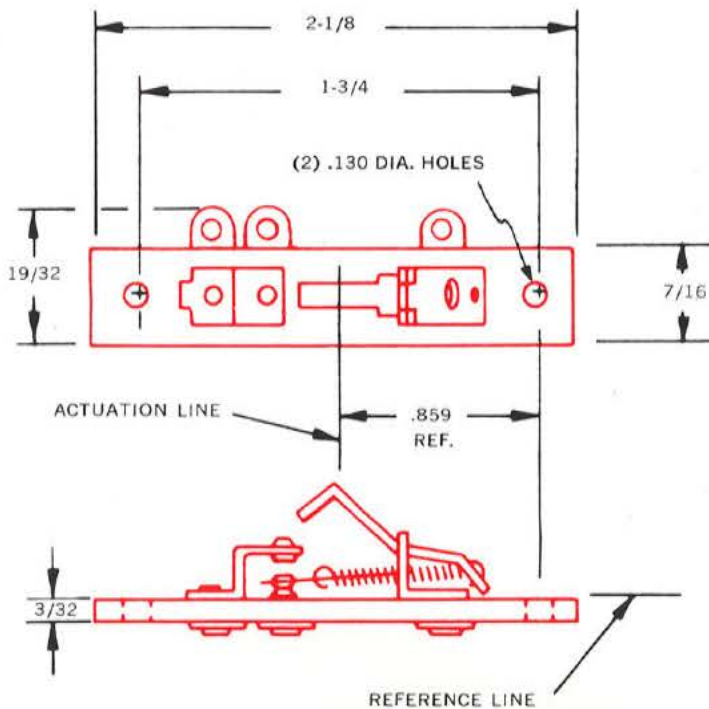
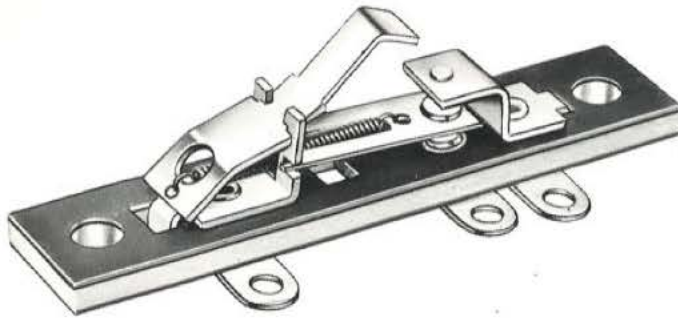
—

—

NOTE: Ferrule on "J" and "M" type is 3/8" — 32 NEF thread with .312" flats .406" high

open switches

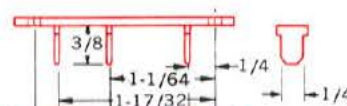
SERIES S23 LIGHT FORCE TYPE SERIES S25 STANDARD BASIC TYPE



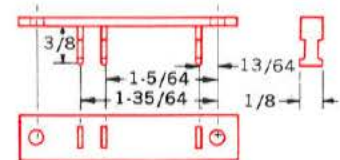
ACTUATORS—In addition to the standard actuators shown here many other actuator forms are available at no extra cost. Special forms can be supplied with partial tooling charge.

CIRCUITRY—Choice of single pole, double throw or single throw, either normally open or normally closed. In general, single throw may be specified by changing suffix number by 01 for normally open and 02 for normally closed. For example S25-60T is double throw, normally open is S25-61T and normally closed is S25-62T. Applies to S23 Series.

TERMINALS—Three standard terminal types include flat solder, integral solder and Quick Connect as shown here.



QUICK CONNECT



INTEGRAL SOLDER

NOTE:

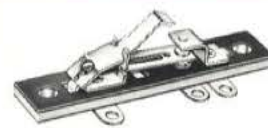
To specify quick connect terminals change suffix "T" to "Z". To specify integral solder terminals change suffix "T" to "W".

NOTE:

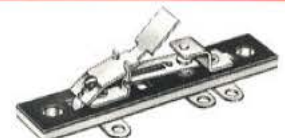
To specify flat solder terminals change suffix "W" to "T". To specify quick connect terminals change suffix "W" to "Z".

RATING: S23 5 Amps., 125 VAC
RATING: S25 10 Amps., 125 VAC—5 Amps., 250 VAC
1/4 HP, 125/250 VAC
RATING: S30 10 Amps., 125 VAC—5 Amps., 250 VAC
1/6 HP, 125/250 VAC

Und. Lab. Inc. listed, and CSA approved.



S23-00T/S25-00T



S23-60T/S25-60T

OPERATING FORCE SERIES S23 (Maximum in Ounces)

3

1

OPERATING FORCE SERIES S25 & S30 (Maximum in Ounces)

9½

3

REST* (Maximum in inches)

.504

.525

OPERATING POINT* (Minimum in inches)

.353

.300

OVERTRAVEL (Minimum in inches)

.045

.040

MOVEMENT DIFFERENTIAL (Maximum in inches)

.070

.150

REMARKS: *Measured above reference line.

NOTES: 1. The S23 and S25 series switch actuator is electrically "live" and must be operated by a non-conductive part or insulated by means of nylon insulators. These are applicable to a limited number of actuator designs. (Of the types shown here only the -20T and -40T will accept insulator.)

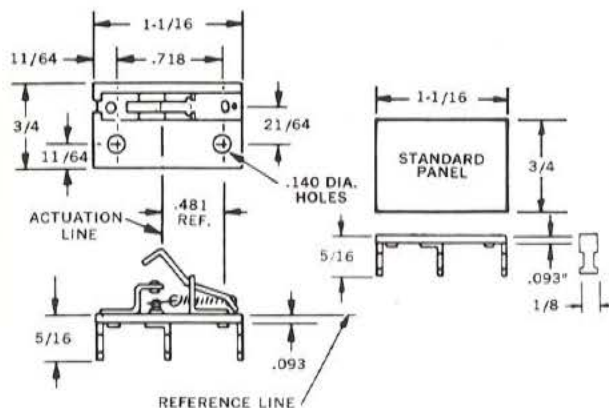
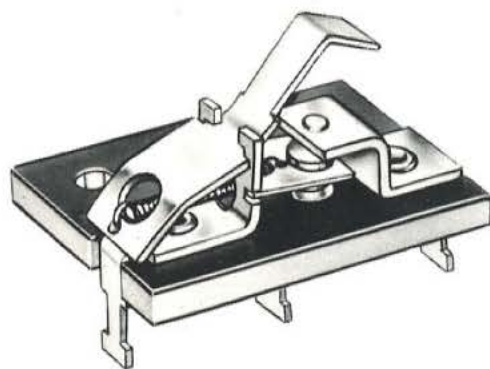
2. Operating point is measured from top of panel to top of actuator.

3. Actuator arms shown are 1/8" wide, except—60T which is 1/4" wide.

4. Operating force is measured at highest point on actuator.

Series S30 available with Gold Crosspoint Contacts for low energy switching applications . . . see pages 26 and 27.

SERIES S30 MINIATURE OPEN TYPE



MATERIALS

PARTS	SERIES S-23 & S-25
Panel	XP Bakelite
Movable Blade	Spring Brass
Coil Spring	Stainless Steel
Actuator Arm	Brass
Flat Solder Terminals	Tin Plated Brass
Integral Solder Terminals	Cadmium Plated Brass
Quick Connect Terminals	Brass
Contacts	Silver Cadmium Oxidized



S30-00W



S30-20W

7 1/2 ozs.

7 1/2 ozs.

.533"

.526"

.378"

.382"

.045"

.080"

.085"

.085"

weatherproof SERIES E72

Cherry put a switch inside a switch ...
so it's watertight and weatherproof!



Cherry's basic E72-40A is one of a series of sealed, snap-action switches so remarkably well protected on the outside, that they're moisture resistant. The sealed enclosure houses one of Cherry's E62 subminiature switches, proven reliable over many years in the most demanding applications.

A very compact, functional size, it comes with insulated, 10 inch, 16 gauge leads attached. The E72-40A is rated at 10.1 Amps., 1/4 HP and 125/250 VAC. Listed by Underwriters' Laboratories, Inc., and has been approved by CSA for AC use.

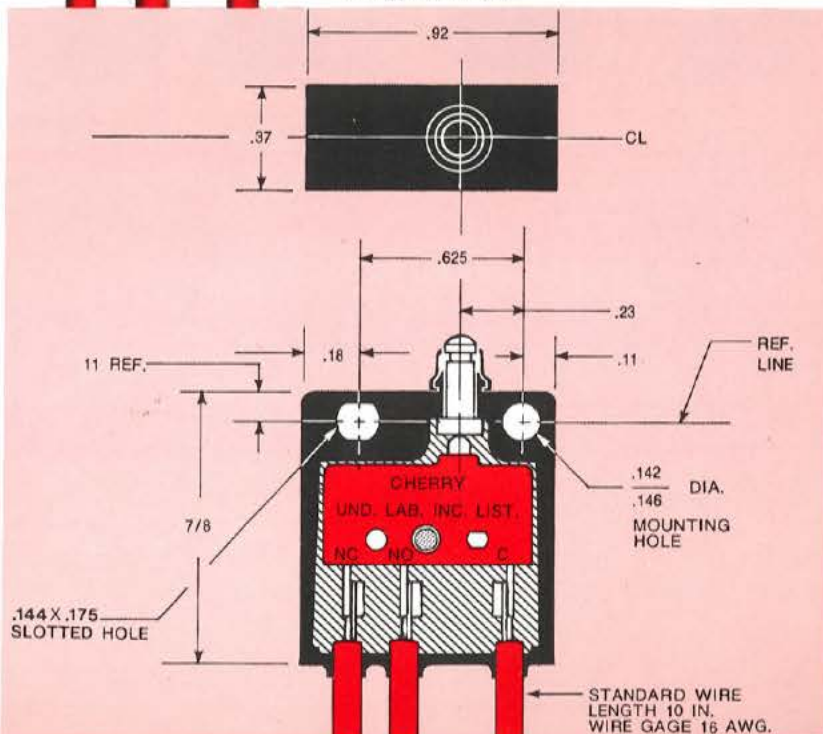
The E72 series is also available with hinged external actuators, Cherry part number E72-40H.

OPERATING CHARACTERISTICS AT BUTTON

- REST Max. .390"
- PRETRAVEL Max. .040"
- OPERATING POINT310—.350"
- OVERTRAVEL Min. .035"
- MOVEMENT DIFFERENTIAL Max. .004"
- OPERATING FORCE Max. 300 Gms.

NOTE:

For low energy switching applications, the E73 Series of this switch is available with Gold Crosspoint Contacts. See pages 26 and 27 for general information on Cherry's low energy switches.

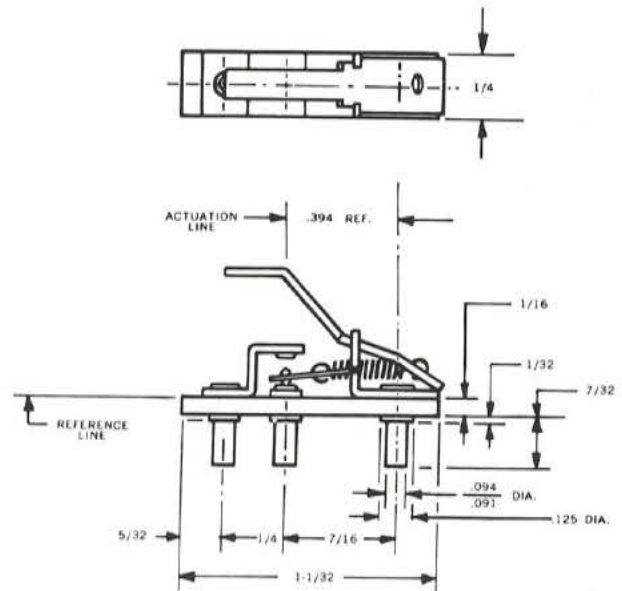


Cherry gold "crosspoint" contact

Engineers can now take a completely new approach to switching of low energy circuits. The Gold "Crosspoint" Contact switch design provides reed switch reliability, with snap action switch precision and utility. No need for magnets and installation adjustments. The result is much lower installed cost.

Positive Snap-Action Switching of Low Energy Solid State Circuits

- High reliability in low level switching applications from 4 to 100 milliamperes at 4 to 30 volts
- Long Life . . . measured in millions of operations
- Initial insertion resistance far below 50 milliohms (lower than reed switches)
- Very high force per unit area (contact pressures)
- Reduced susceptibility to contact closure interference from foreign particles
- Reed switch reliability with snap-action switch precision and utility



RATING: 0.1 Amp, 125 VAC Und. Lab. Inc. listed, and CSA approved					
	E21-00A	E21-50H	E21-50K	E68-00A	E78-00A
OPERATING FORCE Maximum	75 grams	35 grams	35 grams	15 ozs.	24 ozs.
REST POSITION* Maximum	.635"	—	—	.845" — .905"	.845" — .905"
PRETRAVEL* Maximum	.047"	.125"	.125"	.125"	.125"
OPERATING POINT*	.578" ± .020"	.600" ± .045"	.806" ± .045"	.720" — .820"	.720" — .820"
OVERTRAVEL Minimum	.050"	.090"	.085"	.375"	.375"
MOVEMENT DIFFERENTIAL	.010"	.030"	.030"	.045"	.075"

REMARKS: *Measured above reference line.

**Materials as well as other specifications, operating characteristics and engineering drawings on Gold "Crosspoint" Contact Switches are to be found elsewhere in this catalog as follows:

Except for contacts and ratings:

E21-00A is similar to E22-00A shown on pages 12-13

E21-50H is similar to E22-50H shown on pages 12-13

E21-50K is similar to E22-50K shown on pages 12-13

E68-00A is similar to E69-00A shown on pages 14-15

E78-00A is similar to E79-00A shown on pages 16-17

(Note: Gold Crosspoint Contacts are also available on all other configurations of the E22 series, E69 series, E79 series shown in this catalog.)

(Note: See also series E93 Solder Base Subminiature on pages 6-7.)

switches for low energy circuits

VERSATILITY IN APPLICATION

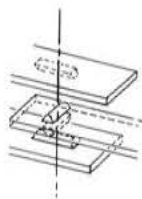
Cherry Gold "Crosspoint" Contact switches are available in a wide variety of switch types, sizes, and mountings for a broad range of electronic applications. In addition to the switches shown on these two pages, many other configurations are available with gold crosspoint contacts. These are indicated by notation under "REMARKS" at the bottom of pages 6 thru 25 and 28-29.

CONTACT CROSS SECTION



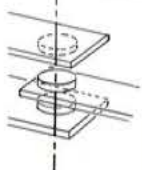
The contacts in these switches are W/E Alloy #1 . . .
69% Gold, 25% Silver, 6% Platinum

"CROSSPOINT" CONTACTS



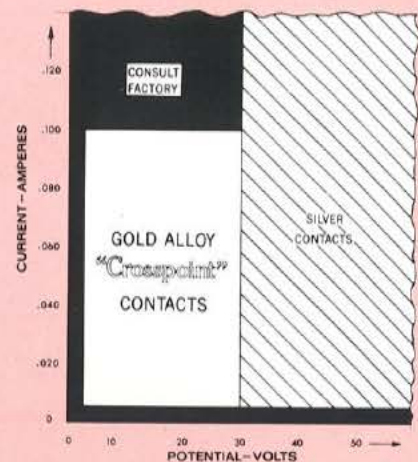
The gold contact prisms are welded at right angles to each other, providing maximum contact pressure and minimum hazard of contact closure interference.

CONVENTIONAL CONTACTS



Ordinary contacts provide far less actual contact pressure and are susceptible to contact closure interference caused by foreign matter.

AMPERES VS VOLTS



This chart is intended only as a general guide. Application of information with respect to electrical and mechanical life requirements and type of actuation may require deviation from suggested contact materials.

					
G13-00E	S31-20P	E53-00B	E63-00A	E63-00H	E63-00K
15 ozs.	7½ ozs.	4.0" gms. Torque	90 grams	24 grams	26 grams
—	.533"	18° Max.	.375"	—	—
.050"	—	—	.030"	5/32"	9/64"
.285" ± .020"	.378" Min.	21° Max. from Rest	.330" ± .015"	.350" ± .030"	.570" ± .030"
.100"	.080"	15° Min.	.035"	.040"	.030"
.015" Max.	.085" Max.	3° Min.	.004" Max.	.020" Max.	.020" Max.

REMARKS: *Measured above reference line

Materials as well as other specifications, operating characteristics and engineering drawings on Gold "Crosspoint" Contact Switches are to be found elsewhere in this catalog as follows:

Except for contacts and ratings:

G13-00E is similar to E1300E shown on pages 20-21

E53-00B is similar to E51-00B shown on pages 18-19

E63-00A is similar to E61-00A shown on pages 8-9

E63-00H is similar to E61-00H shown on pages 8-9

E63-00K is similar to E61-00K shown on pages 8-9

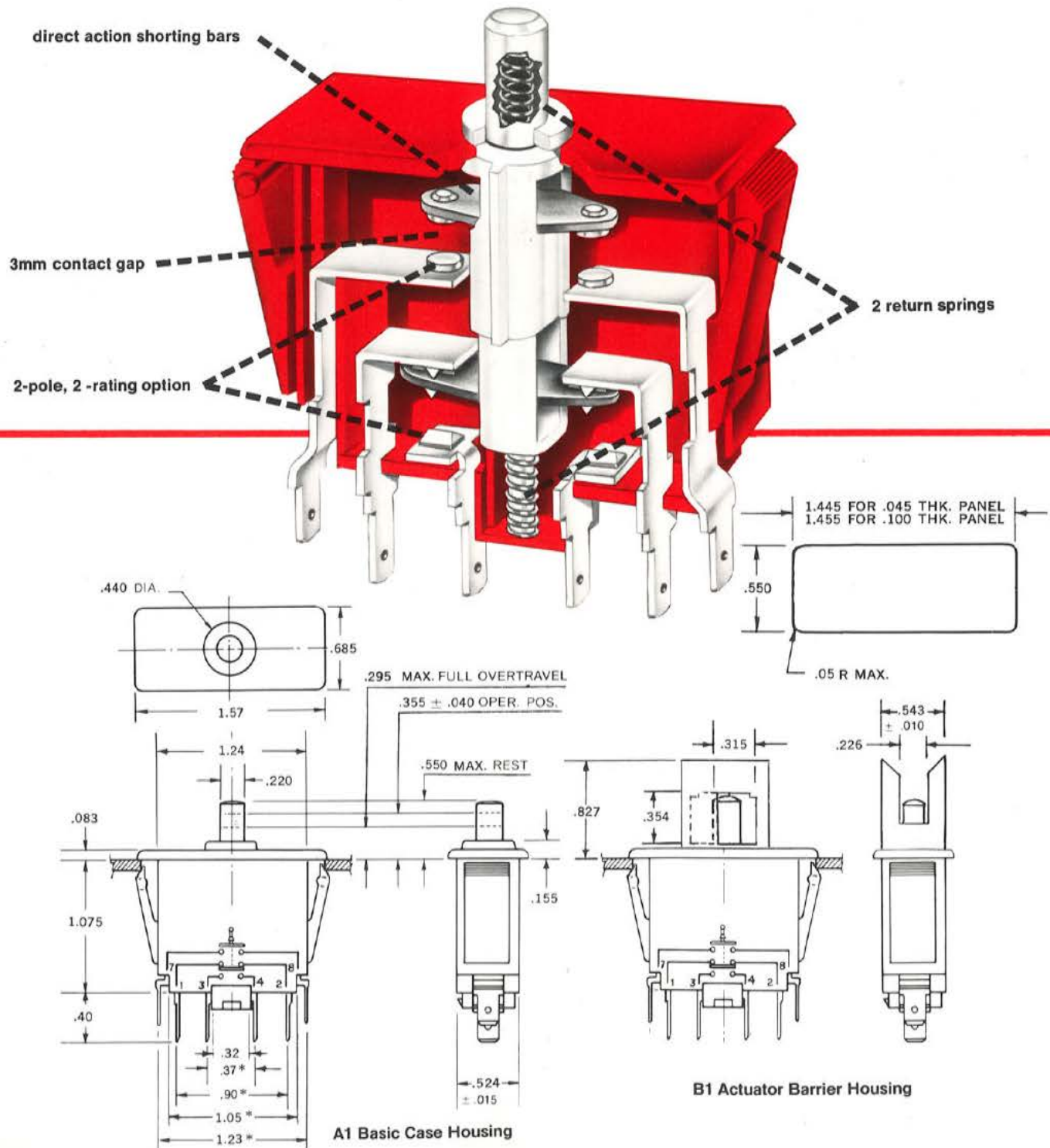
(Note: Gold Crosspoint Contacts are also available on all other configurations of the E13 series, E51 series, E61 series shown in this catalog.)

(Note: See also series E93 Solid Base Subminiature on pages 6-7.)

line-interrupt switches put safety first

Specifically engineered for personnel safety while performing routine maintenance and repairs on electrical equipment. When actuator button is released, power circuit is immediately broken, allowing a serviceman to work in safety. Also give protection when an access hatch or safety barrier is inadvertently removed.

Designed to meet worldwide safety specifications, these switches incorporate direct action, double make/double break shorting bars and a minimum of 3mm contact gap. Two parallel return springs, either of which could safely break the circuit alone, give added protection. UL listed and CSA approved. Designed to meet international requirements of VDE, BSI, CEE, JETL, SEV, OVE, DEMKO and NEMKO.



* Note: dimensions are for .187 terminals only.

OVER 200 MODELS AVAILABLE

Cherry Line-Interrupt Switches are offered in over 200 variations of contact ratings, cases and circuitry, described below. Model numbers for ordering may be easily determined as explained here. In general, the first 3 characters describe the contact rating. Contact arrangement is coded by the letter following. The next two describe the case style, and the final letter the terminals.

For example:

F82	(A)	(A1)	(10)
contact	contact	case and	terminals
rating	arrangement	button style	

describes a 16 amp switch in a basic case (without barrier) having 2 SPST double break normally open circuits. (form "X")

CONTACT RATINGS

F81: rated 10 amps at 125 or 250VAC ($\frac{3}{4}$ hp at 125VAC, $1\frac{1}{2}$ hp at 250VAC).

F82: rated 16 amps at 125 or 250VAC ($\frac{3}{4}$ hp at 125VAC, $1\frac{1}{2}$ hp at 250VAC).

F83: gold crosspoint contacts for low energy switching. Rated 0.1 amp at 125 or 250VAC.

F84: combines two different ratings in a single switch.

CONTACT ARRANGEMENT

(A) 2 circuit SPST NO DB (2 form "X" contacts)

(J) SPST NO DB (form "X" contact) plus SPDT DB (form "Z" contact)

(D) SPST NO DB (form "X" contact) plus SPST NC DB (form "Y" contact)

(X) SPST NO DB (form "X" contact)

(Y) SPST NC DB (form "Y" contact)

(Z) SPDT DB (form "Z" contact)

note: SPST = single pole single throw

SPDT = single pole double throw

NO = normally open

NC = normally closed

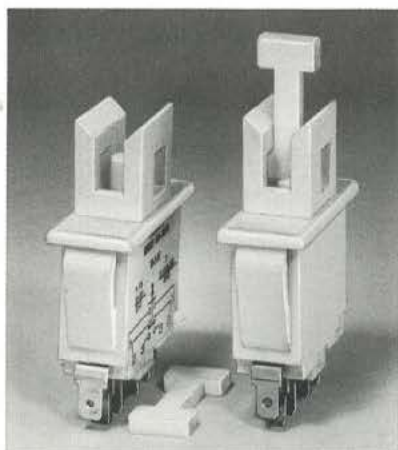
DB = double break

Form	Description	Symbol
X	SPST NO DB	
Y	SPST NC DB	
Z	SPDT DB	

CASE STYLES



A1 CASE
is the basic style.



B1 CASE
incorporates barriers around
the actuator button.

TERMINALS

Either $\frac{3}{16}$ " (10) or $\frac{1}{4}$ " (20) male push-on terminals are standard. Others can be tooled. In most cases terminal sizes may be mixed on a switch to help minimize wiring errors.

MATERIAL SPECIFICATIONS

Case	U.L. 94V-0 Thermoplastic
Actuator Button	U.L. 94V-0 Thermoplastic
Contacts: Standard	Silver Alloy
Gold Crosspoint	Gold Alloy
Terminals	Copper Bearing Alloy
Moving Blade	Copper Bearing Alloy
Springs	Music Wire
Guide Pin	U.L. 94V-2 Thermoplastic

Call **CHERRY** for...



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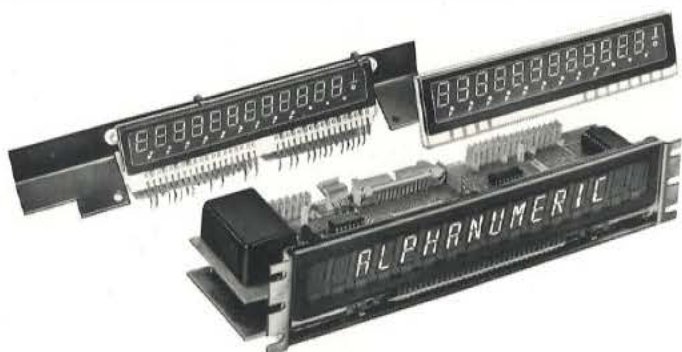
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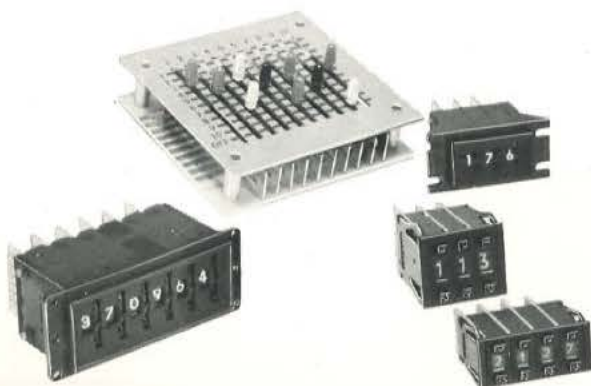
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Cherry gas discharge display technology offers you choices of 7 segment numeric or 14 segment alphanumeric displays — and complete display systems including all drive electronics completely packaged, ready to plug in . . . and use!

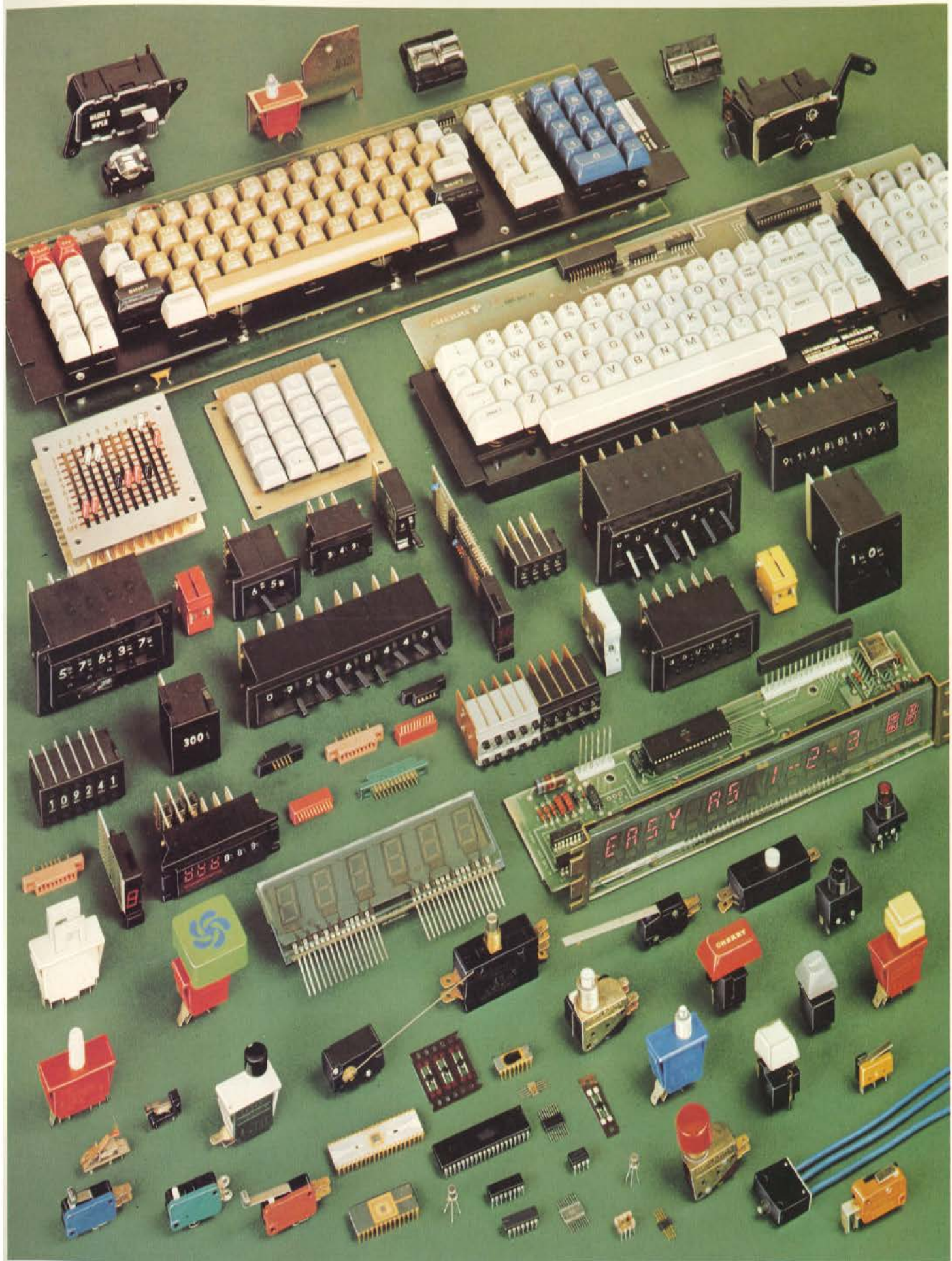
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GENERAL PURPOSE

